SEPTEMBER 30, 1957

STEEL
The Metalworking Weekly

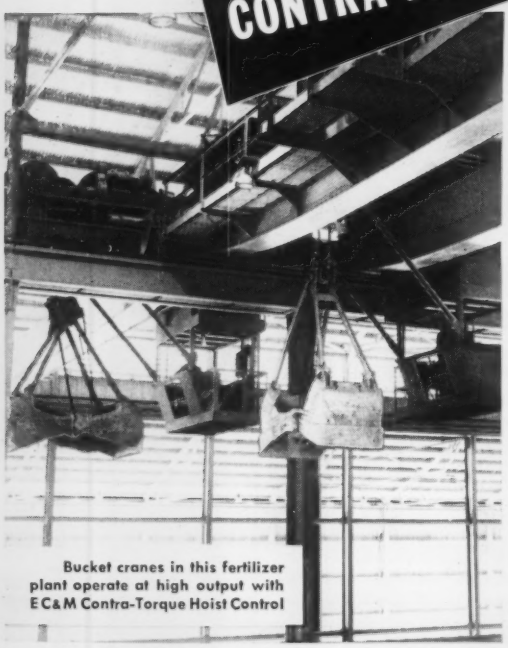
A PENTON PUBLICATION

Why Prices Rise
—Page 45

✔ How To Avoid Cracking Die Steels . . . Page 79

✔ Sheet, Strip Demand Heading Up . . . Page 103

Bucket crane of the Level-Luffing type operates speedily under EC&M Contra-Torque Hoist Control



Bucket cranes in this fertilizer plant operate at high output with EC&M Contra-Torque Hoist Control

HERE'S HOW EC&M FREQUENCY RELAY CONTROL improves A-C Bucket Crane performance

CONTRA-TORQUE®

FAST GETAWAY! Quickly responsive to the frequency of the induced-rotor voltage, EC&M FREQUENCY RELAYS match torque requirements to the load. They get the motor up to speed quickly for lowering the bucket and moving the trolley in or out. A lot of time saved between trips!

WIDE SPEED SELECTION! These relays permit pick-up of Contra-Torque lowering connections on any master switch speed point. No waiting until last down point is reached. Wider choice of speed gives greater flexibility in clean-up operations and speeds output!

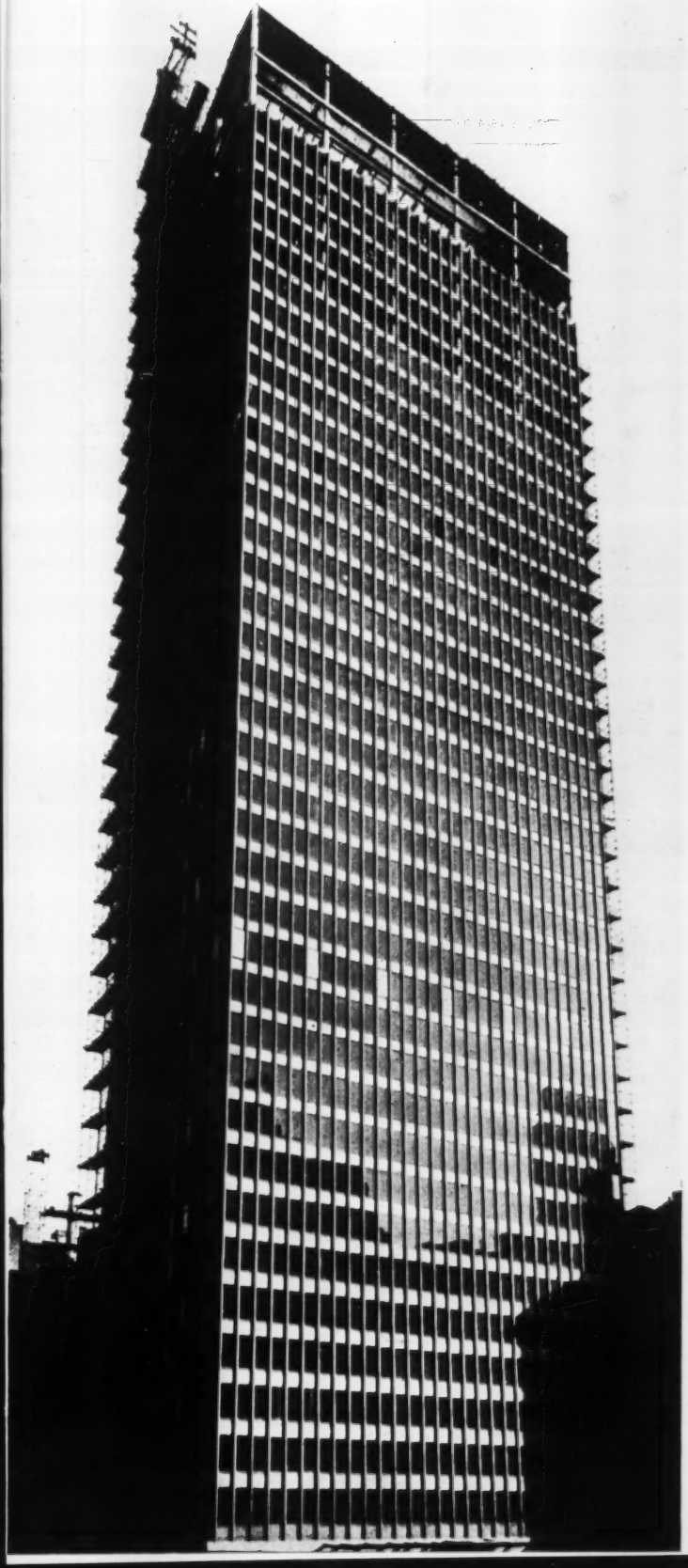
SMOOTH STOPPING ELECTRICALLY! *Off-point braking** brings the descending load to rest and the magnetic brake sets to hold the load. Electrical braking has practically eliminated holding brake wear on many cranes now equipped with this feature.

SPEED-LIMITING! Safety on all speeds. These relays (one set for hoisting and lowering) automatically shift motor connections to safeguard lowering operation with far greater skill than human hands.

***Off-point braking** to eliminate brake wear
—a new EC&M development for AC bucket cranes

THE ELECTRIC CONTROLLER & MFG. CO.
A DIVISION OF THE SQUARE D COMPANY
CLEVELAND 28 • OHIO

7407



38 stories high -and it's bolted!

You're looking at the 38-story Seagram Building, at 375 Park Avenue, New York—presently the nation's tallest office building to employ high-strength bolting. The bronze-clad beauty, trimmed with tinted glass, occupies the blockfront between 52nd and 53rd Streets. Approximately 190,000 Bethlehem High-Strength Bolts were used in joining the structural members of its 13,447-ton steel framework.

With Bethlehem High-Strength Bolts so easy to install, the erection of the steelwork was completed in slightly less than six months of actual working time. Moreover, because of the lack of construction noise, as compared with riveting, the structure was recipient of New York's "Quiet City Award."

Bethlehem High-Strength Bolts save erection time because they can be installed quickly with a holding wrench and a pneumatic impact wrench. They provide joints which are permanently tight. They also promote safety as there's no fire hazard involved, nor any danger of injury from tossed rivets.

Bethlehem High-Strength Bolts are made of carbon steel. They are heat-treated by quenching and tempering, and meet every requirement of ASTM Specification A-325.

If you have any question about Bethlehem High-Strength Bolts, feel free to call the nearest Bethlehem sales office. Or if more convenient, drop a line to us at Bethlehem, Pa.

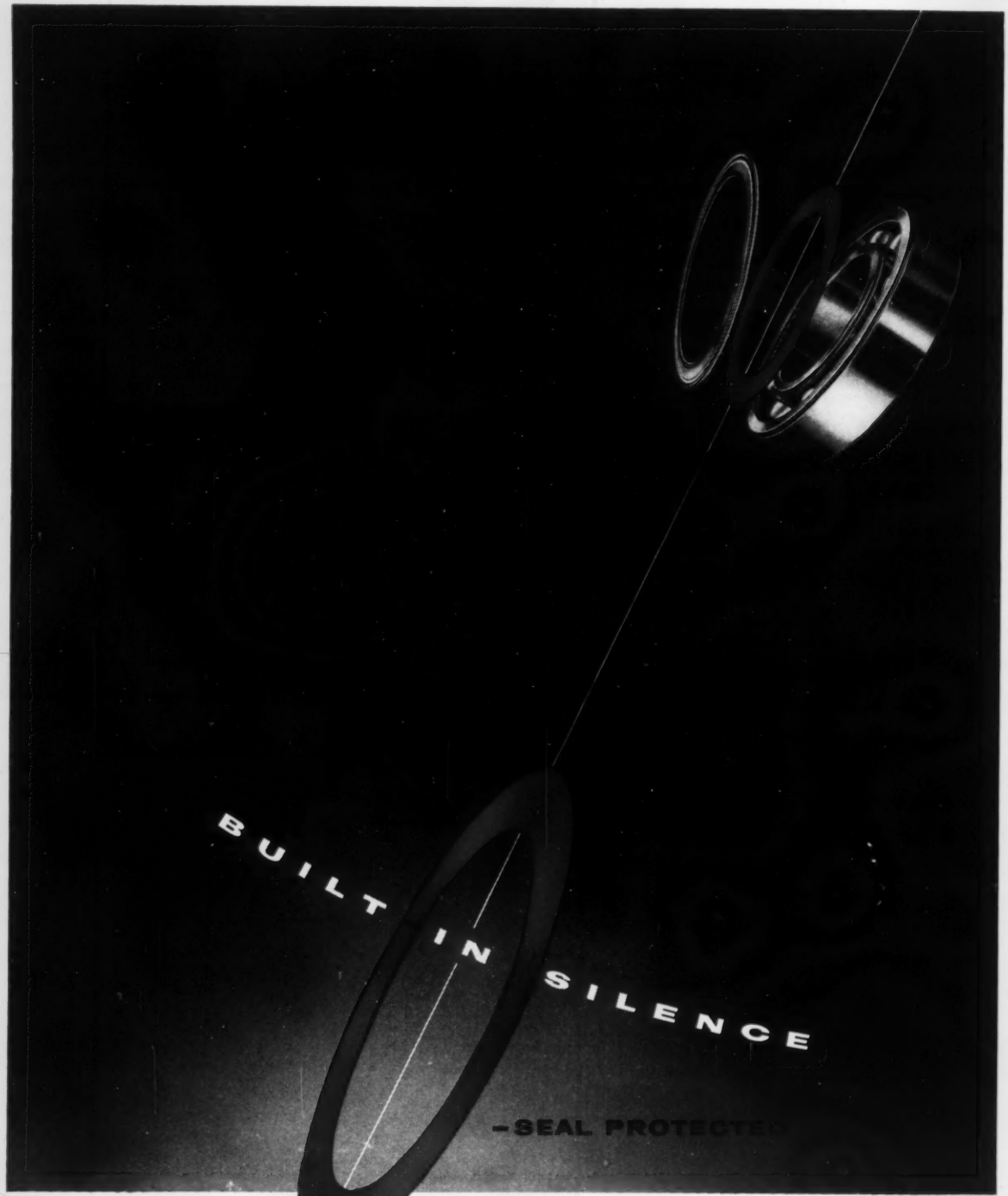
Architects. Mies van der Rohe and Philip Johnson. Associate Architects: Kahn & Jacobs; Structural Engineers: Severud-Elstad-Krueger; Mechanical Engineers: Jaros, Baum & Bolles; General Contractor: George A. Fuller Company; Renting and Managing Agent: Cushman and Wakefield.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



EVERY TYPE—EVERY USE

SKF®

- *Ball Bearings*
- *Cylindrical Roller Bearings*
- *Spherical Roller Bearings*
- *Tapered Roller Bearings* (Tyson®)

7762

®Reg. U.S. Pat. Off. Tyson Bearing Corporation

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

The most silent rolling contact bearing in the world of today

who gets hooked?

What happens when a stamping plant fishes for business with price as the bait?

Sure the lure is attractive... *but who gets hooked?* The old rule, *Caveat Emptor*, says "Let the buyer beware." In the cold light of business, it's well that he should.

When a stamping plant pegs prices at or below cost figures to obtain an order, what usually happens? Obtained at a price, the order must be produced at a price. Cutting corners usually means cutting quality. The order takes a back seat to more profitable business. When the delivery date arrives, the buyer receives alibis — not stampings.

Who pays for delays when deliveries are late or when defective parts must be corrected? The buyer, of course!

How can *you* avoid being snagged? When you're buying stampings, make sure that the quoted price covers the type of service and quality that you expect to receive. At Crosby, it *does!*

METAL STAMPING SINCE 1896 · THE CROSBY COMPANY · BUFFALO, N.Y.

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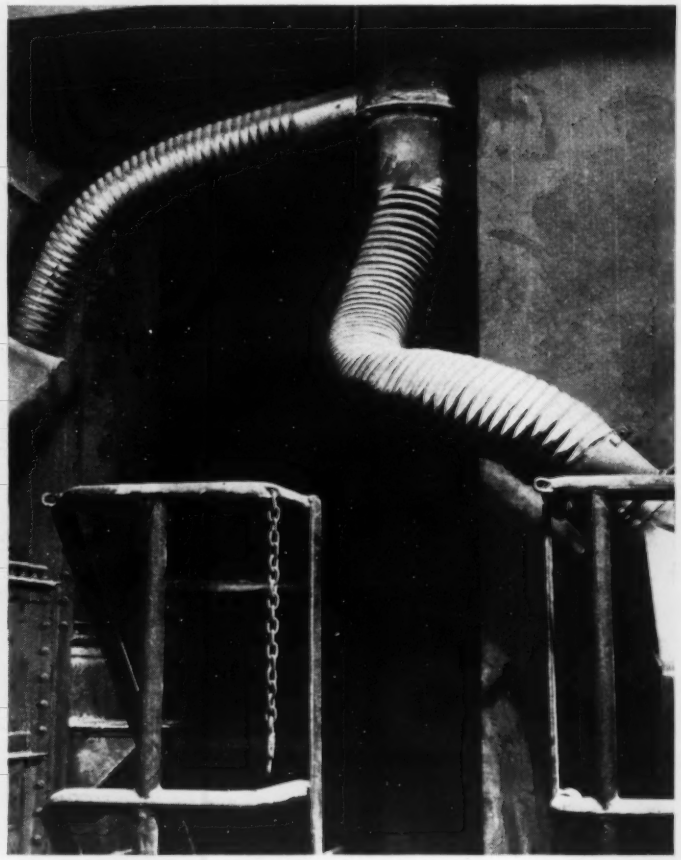
GOODYEAR INDUSTRIAL PRODUCTS
G.T.M.-Specified
HD Industrial Vacuum Hose for conducting abrasive dust or acid fumes
A
B
C
A Tough wear- and weather-resistant cover
B Reinforcement of sturdy wrapped fabric plus helix of flat steel wire prevents kinking and collapsing
C Smooth rubber tube resists attack of abrasive particles or corrosive fumes



Hose at one-third the cost outlasts pipe—4 to 1

Carrying off large quantities of abrasive dust had always been an expensive problem at this Northwestern plant. For it quickly ate through heavy-gauge pipe—especially where the ducts had to make sharp turns. In fact, 8 to 10 months was the limit for any pipe they tried.

But the G.T.M.—Goodyear Technical Man—figured he could top that with HD Industrial Vacuum Hose. It not only cost much less than the special pipe, but could be installed far more quickly and easily. And when worn, it could be rotated to distribute wear. But here's the real pay-off: at last report, *the G.T.M.'s hose was still going strong after 3 years' service.*

What about production-line problems swelling *your* costs – and eating *your* profits? You can't lose by turning the G.T.M. loose on them – whenever they involve industrial rubber problems. You can reach him through your Goodyear Distributor – or by writing:

Goodyear, Industrial Products Division,
Akron 16, Ohio

HD INDUSTRIAL VACUUM HOSE by

GOODYEAR

THE GREATEST NAME IN RUBBER

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

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The Metalworking Weekly

September 30, 1957
Vol. 141 No. 14

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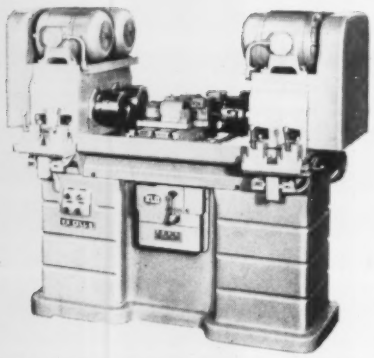
Only One Machine But Six Operations



STANDARD EX-CELL-O PRECISION BORING MACHINES lower costs, increase profits, yet every one of 8 models takes these jobs in stride: • BORING at today's production speeds, maintaining extremely close tolerances • TURNING with a minimum of tooling • FACING with standard facing heads or standard cross slides • COUNTER-BORING taken in stride—rugged spindles support multi-diameter bars • CHAMFERING—plunge or feed face • GROOVING with table or standard cross slides.

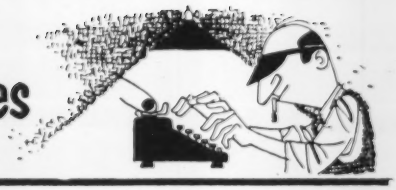
Clean, smooth, *precision* operations at lower costs—call your Ex-Cell-O Representative or write Ex-Cell-O, Detroit.

57-87

XLO EX-CELL-O FOR PRECISION

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

behind the scenes



Industry as Teacher

Enemies of our free enterprise capitalistic system delight to ferret out the sins of its early development and hold them up as arguments against it. Well, the system as we know it today in America is not without blemish, but the fact that we can admit it is not perfect speaks well for those who live under it. Most serious economists agree that the system has evolved and is still evolving. They hint that if a businessman of today were transplanted to the U. S. of 1847 and his counterpart of that date were suddenly set down in 1957, neither would know how to run his business.

In earlier days, the capitalistic system was as immature as its devotees. Most businessmen were as ignorant of the value of public relations as they were of socialism. They had no interest in labor other than as a means of production. That is why the resurrection of adolescent rascality is a specious dodge. Shucks, everybody knows about "the public be damned" attitude of early vested interests; more remarkable is the fact that so many persons still regard management as the enemy of the people.

The modern businessman accepts as part of his responsibility the sometimes thankless and frequently misinterpreted task of educating the public in finance and economics. Warner & Swasey Co., Cleveland, recently produced a series of ads in the public interest. Because Warner Seely, vice president of Warner & Swasey, felt that many persons found it quite a chore to make sense out of political, economic, and financial theory, he caused to be circulated the following discussion of one of the more basic of our American economic truths. We reprint it by his permission:

Look at It This Way

"You repair shoes. He pumps gasoline. I raise chickens. We sell to each other and to the man next door, a retired schoolteacher on a pension.

"Somebody convinces me that I can make just as much for less work, so I raise fewer chickens but increase the price of those I do raise.

"But aren't you going to repair *more* shoes in exchange for a chicken; he isn't going to give me *more* gasoline for a chicken. Its the same chicken; I haven't made it *worth* any more to you. So all you do is raise the price of repair work; he raises the price of gasoline. But the retired schoolteacher can't raise his pension; he just gives up chicken.

"So all I've done is lose one customer and traded dollars with the others.

"If I had worked more efficiently (maybe invested in a mechanical brooder), I would have had more chickens to trade for more repair work and more gasoline, and by *cutting* costs and prices a bit, got two more teachers as customers instead of none.

"And more people would be enjoying chicken."

Editors Assist

We are obliged to Consulting Editor John Knox for this item. Aside from being a first-class steel plant man, John has a wide understanding of two such apparently unrelated subjects as theology and the stock market. He can give you a quotation from Saint John or Wall Street with equal facility, and interpret them, too. How many men do you know who can do that?

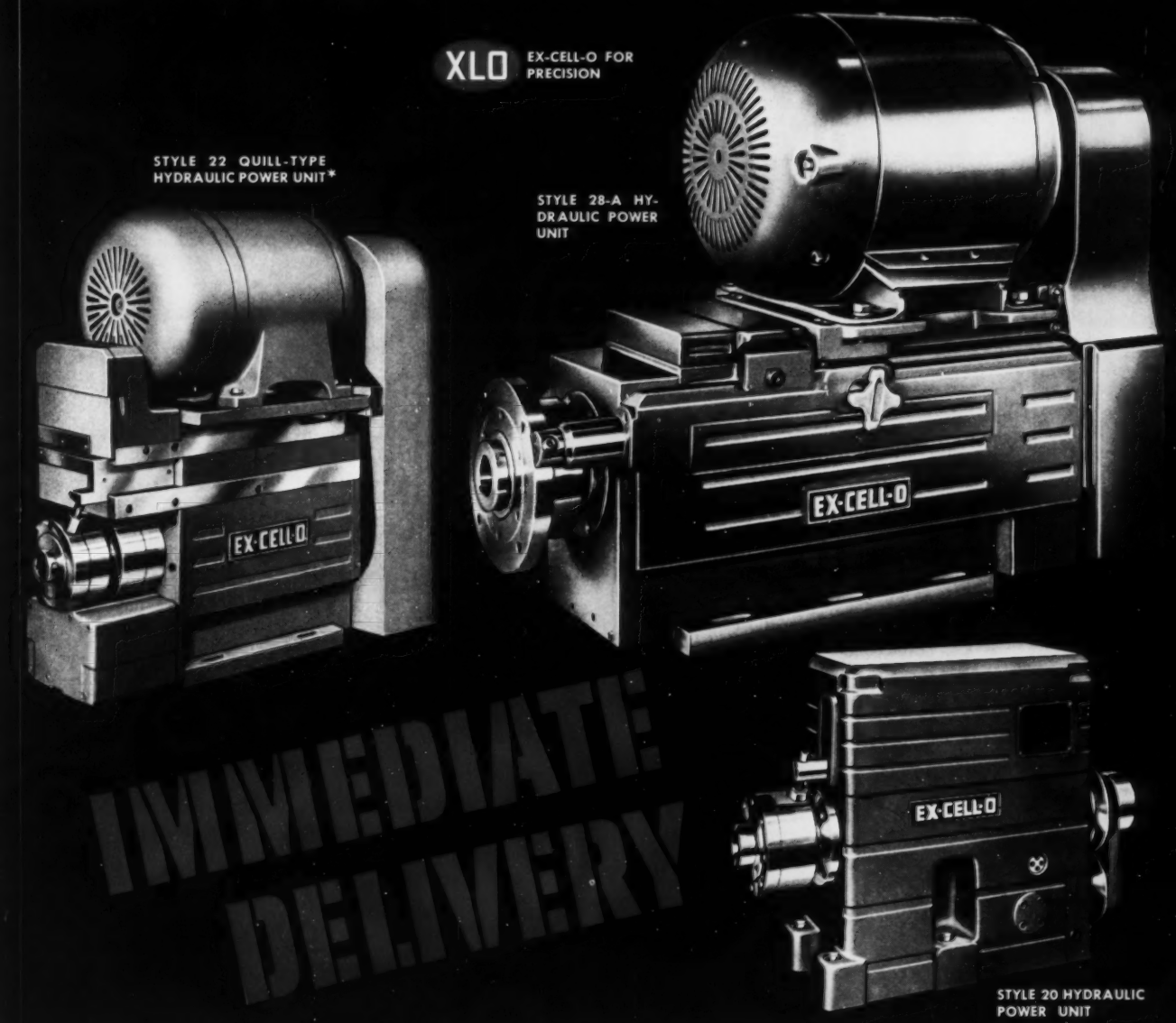
Most of the editors on STEEL are kind enough to supply us with varied and interesting items. Dr. Al Gray, technical editor, solemnly informed us that a revised edition of *Prospecting for Uranium* is now available through the good offices of the Atomic Energy Commission at the ridiculous price of 75 cents. "Splendid book," said Al, rubbing his hands. "Has an enlarged section on geologic occurrence of uranium. Good stuff on the domestic uranium procurement program. Has compilation of laws and regulations, too."

If you want to curl up with this dandy book, slip six bits to the Superintendent of Documents, Government Printing Office, Washington 25, D. C., and prepare yourself for a thrill.

Shrdlu

(Metalworking Outlook—Page 39)

XLO EX-CELL-O FOR PRECISION



57-74

Specify Ex-Cell-O standard power units and cut your machine tool lead time

Today's demand for increased productivity, lower per-unit cost, even on relatively short runs, is being met economically by automatic, single-purpose, high-production machines—consisting essentially of a plain base and one or more Ex-Cell-O Quill-Type Hydraulic Power Units. Their flexibility allows them to be used over and over again, spreading their initial cost over many productive years.

These standard, self-contained Ex-Cell-O Hydraulic Power Units are now being used for: drilling, counterboring, spot facing, reaming, as well as prime movers for milling equipment. With multiple spindle head attached to quill flange, multiple operations may also be performed.

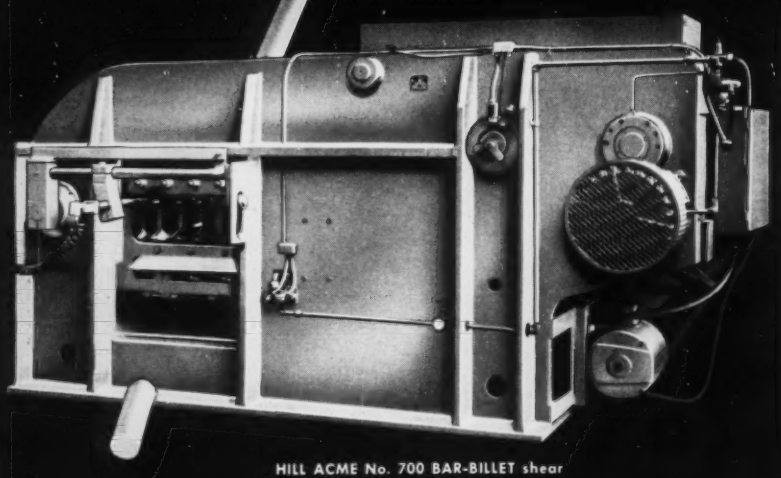
For the full story on the cost-saving advantages Ex-Cell-O Self-Contained Power Units offer your short- or-medium-run production requirements—get in touch with your local Ex-Cell-O Representative. Or, if you prefer, write direct to Ex-Cell-O, Detroit.

*Style 22—8-inch Stroke; Style 22-L—12-inch Stroke

EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN
Machinery Division

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING AND BORING SPINDLES • CUTTING TOOLS • TORQUE ACTUATORS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

Companion machines that help each other and can help you!



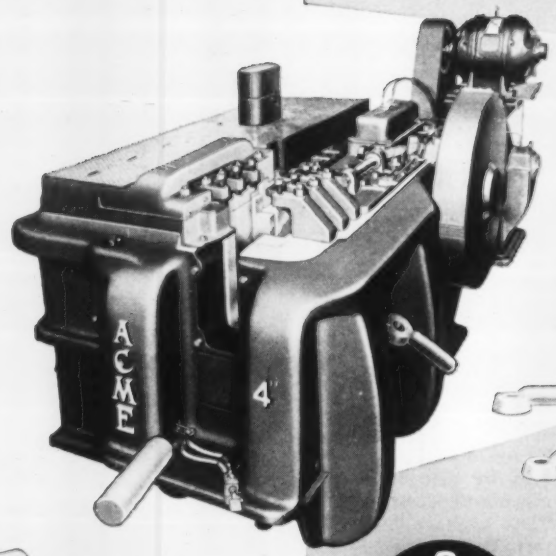
HILL ACME No. 700 BAR-BILLET shear
(Ask for Bulletin B-B)

HILL ACME BAR-BILLET SHEAR

A totally new conception of efficiency in clean, square cuts on bars or billets. Now proven in operation throughout the country. Made in several sizes for cutting stock from 1" to 6" in diameter.

ACME XN FORGING MACHINE

The new, improved ACME XN Forging Machine with its massive, sturdy construction is built to withstand the destructive influences present in all forging machine operations. ACME XN Forging Machines will keep going for long uninterrupted periods, producing accurate, clean forgings at a rate never thought possible a few years ago. A bulletin describing details plus a series of 18 technical articles on modern forging practice will be sent upon request.



HILL ACME TOOLS FOR INDUSTRY

The HILL ACME Company

1207 W. 65th STREET • CLEVELAND 2, OHIO

Manufacturers of: "ACME" FORGING • THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BAR-BILLET SHEARS
"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • "CLEVELAND" KNIVES • SHEAR BLADES

Roebling Royal Blue Wire Rope will take **shock** after **shock** after **shock!**

This, and the fact that Royal Blue is stronger than the strongest you have been using, has helped to make it the most widely favored rope in Roebling's history. It will work hard and last longer on *your* job. Your distributor or Roebling Sales Office will give you full information, or write: John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Distributors, Branches and Warehouses Throughout the Country
Subsidiary of The Colorado Fuel and Iron Corporation

Magnetic-Core Coil Classifier Inspects Tin Plate Continuously, Automatically

Beckman coil classifiers are measuring and recording characteristics and defects of tin plate around-the-clock, in continuous on-line operation. Linear travel, pinhole footage, over- and under-gage tolerances, coatings, quenching strain, slivers, abrasions, damaged edges are all detected and recorded while coils are rolling and shears flying.

Data from detectors is supplemented by manual entries showing date, purchase order, coil, line, and turn numbers. All information is then delayed for correct relationship to shear position. Upon shear activation, the appropriate totalized data is recorded on preprinted formats, with separate records for quality control and customer information. This in-process correlation of upstream detection with shear control and data printout permits accurate profiling of product with no lag in production – increases profit margins.

No vacuum tubes are used – all electronic circuitry consists of extremely reliable, toroidal magnetic cores and other passive elements. Without modification, Beckman coil classifiers are compatible with data reduction systems and in-process control.

Coil classifiers are typical of the many reliable system applications of Beckman counters and timers, proved in thousands of field installations. For more information on counting and timing system applications, write for Data File D-13-67.

Beckman®

Systems Division

325 N. Muller Ave., Anaheim, Calif.

a division of Beckman Instruments, Inc.

Responsible new positions in engineering, manufacturing, technical marketing. Write for Career File 10.

LETTERS TO THE EDITORS

Marketing Is Important

Having spent the last 12 years in marketing, I'm glad you are promoting its importance.

None of the "five main functions of business"—mentioned in the editorial, "Needed: Better Marketing," (Aug. 5, Page 53)—can exist by itself. These functions must be balanced for the successful operation of any business.

It's time more people realized that the marketing section is more than "just a bunch of peddlers."

May I have a copy of your fine article, "Needed: More Marketers," in this same issue (Page 66)?

R. G. Tressler
Specialist-Accessories
Welding Dept
General Electric Co
York, Pa

Business Insight

I would appreciate copies of your 1957 Program for Management articles, Nos. 1 to 8. After reading them, I shall pass them on to my son—a student at the University of Buffalo—who feels they will help him gain insight into business problems.

Theodore F. Cappel
Supervisor of Steel Control
Plumbing & Heating Div
American Radiator & Standard Sanitary Corp
Buffalo

Flexible Plant Expansion

I would appreciate 25 copies of the article, "Plant Design Is Flexible" (Aug. 5, Page 110).

All staff functions, including purchasing, are at our main plant in Lima, Ohio, and many of our suppliers never see the Upper Sandusky operation which was so well described in the article. It will be helpful to those trying to sell our account.

W. Kenneth Hoge
Buyer
Small Motor Div
Westinghouse Electric Corp
Lima, Ohio

Classification of Missiles

In the article, "Census SIC System Revised" (Aug. 5, Page 65), you state: Guided missiles, which formerly had industry number 3721 (aircraft), are shifted to Major Group 19—Ordnance, and are assigned number 1929.

I am interested in knowing how you arrived at this interpretation. If you read over item number 3721 in the old Standard Industrial Classification manual and also in the new one, there is no indication that missiles are included

(Please turn to Page 12)

LIKE ALL

Acme-Gridley

BAR AUTOMATICS

Unusually large tooling zone permits ready access for installation and adjustment of tools and attachments.

All slides are wide and heavy, providing maximum support without overhang.

The NEW 7/16" SIX

...gives you

1. wide tooling versatility
2. high production accuracy
3. long operating dependability

Built to meet the demand for a smaller faster multiple, the new 7/16" EA-6 machine has taken its place in the Acme-Gridley line—chosen by production men who daily prove the advantages of National Acme's "complete line" experience to furnish the right machines for the job.

Write for your copy of Bulletin MRA-56 which illustrates and describes the new 7/16"-Six.

National Acme

THE NATIONAL ACME COMPANY, 189 E. 131ST ST., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N. J., Chicago 6, Ill., Detroit 27, Mich.

(Advertisement)

Formula for Prosperity . . .

Put a tool in a man's hand and you increase his ability to provide for himself. Pre-dawn Man sensed this when he picked up an animal tusk with which to dig or scrape.

Give a man a modern automatic machine tool and you multiply his productivity ten thousand-fold. A simple equation sums it up: MMW = NR + HE × T (Man's Material Welfare equals Natural Resources plus Human Energy multiplied by Tools). Only the quantity and quality of the tools can appreciably affect the equation.

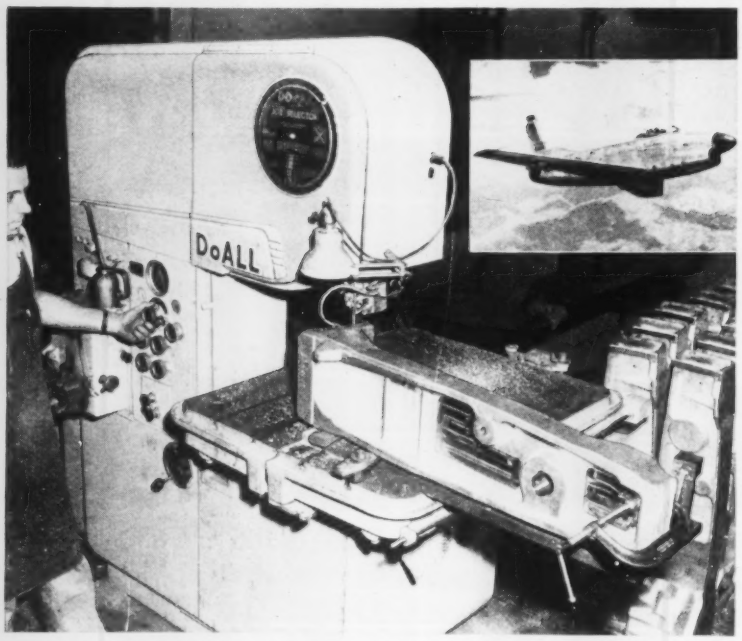
In the U.S. today, with existing tools, 66.5 million employed support themselves and 105 million others. What happens in another 10 years when a working force growing at a rate of 1% per year must support a population growing at a rate of 1.7% per year? The equation holds the answer—only more and better tools can carry the load and provide continued abundant living for all.

The tools are available. For example, the DoALL band machine operator in the picture below is trimming off a jet plane part in about one-third the time formerly required. The continuous-cutting DoALL saw slices through a run of 200 parts in 57½ hours, where end milling required 166½ hours. The 109 hour saving represents the time of one man for nearly fourteen days.

There are thousands of places where the band machining method can be used to make men more productive. Full use of all such modern machines and methods easily will produce a growing abundance of goods and services for a growing population. And that means true prosperity for everyone.

38 local DoALL Sales-Service stores are equipped to demonstrate band machining to any manufacturer interested in time and cost-savings. These stores also offer more than 1500 other machine tool, cutting tool, gaging and supply items.

BAND MACHINING makes this man 300% more productive than he was with a different type of machine tool used for producing jet plane parts.



Reprints of this series on economics plus "economic kits" available for employee education.

ASK FOR LITERATURE describing the newest DoALL band machines with hydraulic table feed, Demon high speed steel saw band, integral coolant system and other improvements. Call DoALL locally, or write.

The DoALL Company
Des Plaines, Illinois
38 Local Sales-Service Stores E-49

LETTERS

(Concluded from Page 10)

in this item. Item number 1929 is identical in the old and new manuals.

F. H. Pfefferle
Cincinnati Shaper Co.
Cincinnati

• *When the old SIC system was published, guided missiles were a research-development item and not included as a product. After the old manual was published, the Bureau of Census ruled it should go in industry number 3721.*

It's true that in the new book, number 1929 makes no mention of guided missiles. However, in the index, Page 348, guided missiles are listed as belonging in number 1929. That's our reason for stating such a change.

Waste Treatment System

In the Sept. 16 issue, there is an interesting article, "One System Handles Many Wastes" (Page 146), on the waste treatment plant at the Buick Motor Co. plant, Flint, Mich.

We would appreciate two copies for our engineers specializing in waste treatment problems.

E. B. Besselievre
Manager
Industrial Wastes Div.
K & H Engineering Co.
Toledo, Ohio

This is of considerable interest to us. We would appreciate a copy.

R. T. Shideler
Assistant Director
Design & Construction
Union Carbide Chemicals Co.
Division of Union Carbide Corp.
South Charleston, W. Va.

Enjoyed Reading Article

May I have a copy of your splendid article, "Troubles in Distribution" (Sept. 9, Page 74). I enjoyed reading it.

Leon Rozene
Bass & Co.
Bridgeport, Conn.

Corrosion Resistance

We coat various metals for corrosion resistance and are much interested in the article, "New Ways To Fight Corrosion" (Part I, Aug. 26, Page 68, and Part II, Sept. 2, Page 158), and would appreciate several tearsheets. We read STEEL regularly with the greatest of interest.

Clayton M. Wright
President
Wright Metalcoaters Inc.
South Hackensack, N. J.

Household Equipment Outlook

Your article, "Suppliers' Outlook Mixed" (Sept. 9, Page 63), is exceedingly interesting. We would like ten reprints.

H. E. Matter
Finishes Div.
E. I. du Pont de Nemours & Co.
Wilmington, Del.

Porous Sheet Query

In your Aug. 5 Technical Outlook (Page 87), is noted: A new porous metal sheet material is made of felted metal fibers. Porosities can be varied over a wide range.

Which company is manufacturing this material?

G. B. Gersten
Liberty Industries Inc.
Brooklyn, N. Y.

• *Contact the SOS Co., 6201 W. 65th St., Chicago, Ill.*

. . . Your best motor investment is Century

Are you sure the electric motors you buy are the best you can get for your money?

The best motors are those which give you the longest service with trouble-free performance. In your factory, that means less downtime and lower production costs. For that reason, Century builds motors that do the toughest jobs in industry.

Standard Century motors are built *to the requirements for continuous use*. If you're a user of electrically powered equipment, you get this Century *industrial* quality regardless of application, and at no extra cost. Here's a real *plus-value* for you.

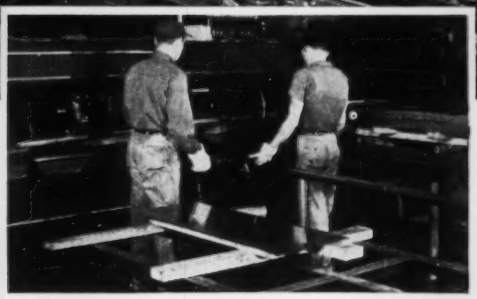
Look into the reasons why your best motor investment is Century.

Century MOTORS

CENTURY ELECTRIC COMPANY

St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

1 PUNCHING— Presses used for punching holes, knockouts, and for stamping small parts are strategically located for efficiency. Some of them run at the rate of 108 strokes a minute, with capacities up to 250 tons. Equipment like this means high-speed production of big-volume runs at low unit cost.



2 SHEARING— Berger shears operate at speeds from 40 to 60 strokes a minute. They can cut sheet steel up to 14' on the shortest dimension . . . handle medium-hard stock up to ⅜" thick. Berger designers and craftsmen know how to use this equipment to give you the most for your money.

PLANNING OR FABRICATING A SHEET STEEL PRODUCT?

...Republic can take the

You may not realize how many different products are made in Republic's Berger Division plants because many are fabricated for other manufacturers and marketed under their brand names. We will manufacture *your* product in volume runs—engineer, fabricate, finish, pack and ship, all to *your* specifications.

Some of our contract-fabricated products are completely assembled units with operating mechanisms installed. Others are sheet metal assemblies that leave our plants finished with a prime coat, ready for final finishing, assembly and packing by our customer.

Our large stock of standard tools and dies and the specialized equipment of our Berger Plants are available to you. Often we can reduce costly tooling investments because we already have the tools to do the job. Because you use our facilities, you can eliminate the overhead problems of building or expanding your plant.

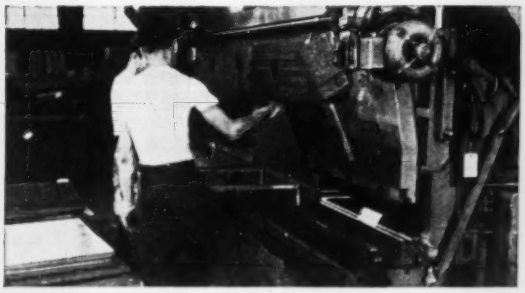
Constant research and development at Berger have resulted in advanced processes and equipment to make your fabricated sheet steel products more attractive, and more economical. Furthermore, our facilities and fabricating experience provide you with the same high quality you see in our own products—lockers, office furniture, shelving and steel kitchens.

If you have a sketch or blueprint, send it along to us with complete specifications. We'll tell you promptly what Berger's specialized service can do for you. Learn more details in Bulletins 793 and 908.

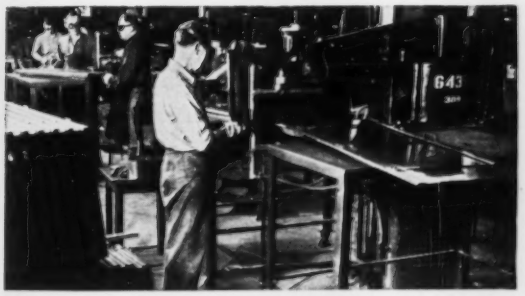
REPUBLIC

REPUBLIC STEEL

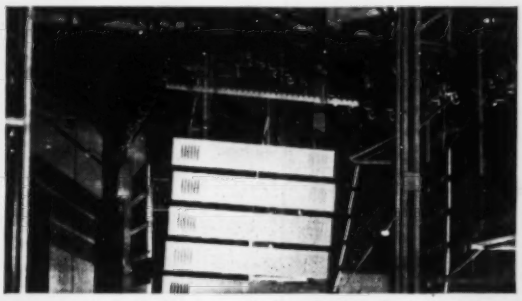
World's Widest Range of Standard Steels



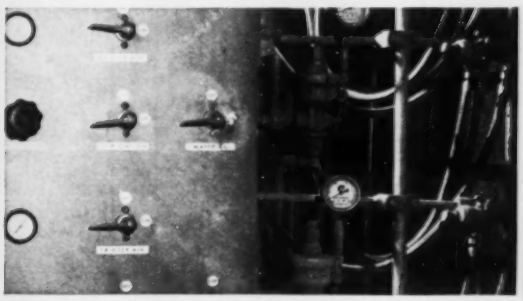
3 FORMING—Brakes run at speeds as high as a stroke a second, and range in capacity from 60 to 500 tons. This means that Berger can handle a variety of production, and various gages, simultaneously. Your product keeps moving.



4 WELDING—Berger's major plant facilities include the very latest welding equipment and techniques. Eighty-eight welders are strategically located to do the best job . . . and do it most economically. When Berger takes your contract, your products keep rolling.

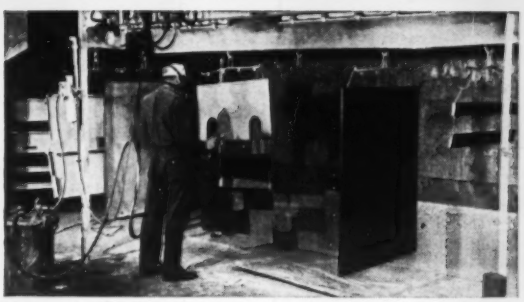


5 BONDERIZING—We're proud of our finishing facilities. And, our new Bonderizing equipment makes them better than ever. As it passes along our Bonderizing line, your product is given exceptional ability to take and hold a fine painted finish—and it acquires superior rust-resistance.



6 ELECTROSTATIC SAFEGUARD—Another reason why Berger-applied finishes are unexcelled. Not one speck of dust can penetrate this electrostatic screen to settle on your product. Electrostatic recovery of atomized paint means greater economy, too.

whole job off your hands



7 PAINTING—We're equipped to paint over 87,000 square feet of steel surface each hour! Equipment includes degreasers for cleaning mill stock parts, mechanical Bonderizers, electrostatic safeguards, 32 spray booths and six dip tanks. Plus 40 baking ovens to assure beautiful, lasting, baked-on finishes that match your sample for color.

8 PACKING AND SHIPPING—The product above is being shipped knocked-down, in cartons. More Berger packing equipment includes newest machines for crate-making and automatic nailing. Beyond our doors, more advantages—you are shipping from centrally-located Canton, Ohio. From planning to packaging, Berger can take the whole job off your hands.

STEEL

and Steel Products

REPUBLIC STEEL • BERGER DIVISION
Dept. C-4002
1042 Belden Avenue, Canton 5, Ohio

Please send Bulletins 793 and 908 describing Berger fabricating facilities and abilities.

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John Carroll University specifies

Youngstown **S**teel **P**ipe for new Campus Service Building

This attractive new Service Building, parts of which are now under construction on the campus of Cleveland's John Carroll University, will contain a Gymnasium, Transportation Hall, Student Activities Center and a Student Dining Hall. To coordinate all the structure's physical functions, the University and its architect specified Youngstown Steel Pipe for its dependability and long life.

Youngstown Steel Pipe is made of only the highest quality steel by steelmen with over 56 years of pipemaking experience. All of Youngstown's fully integrated operations—from iron ore mining to finish pipe threading—are rigidly quality-controlled to provide the best steel pipe available anywhere. Why not make Youngstown your continuing specification for long life and trouble-free installations?

For additional information or service, call your local Youngstown distributor—or contact our nearest District Sales Office, today.

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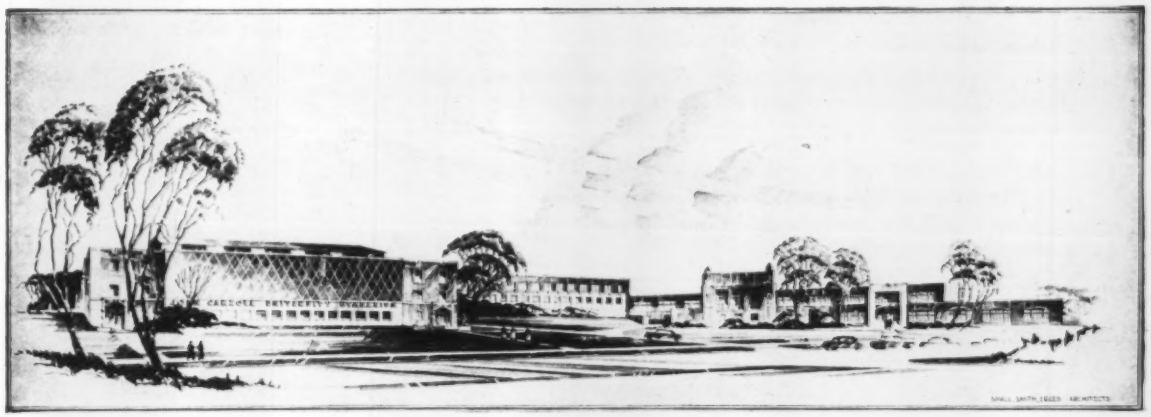

Specify Youngstown and secure these 7 Points of uniform goodness

uniform ductility
uniform lengths
uniform threading
uniform weldability
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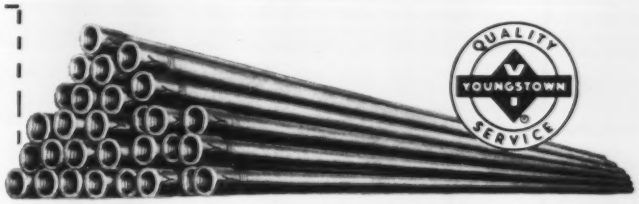
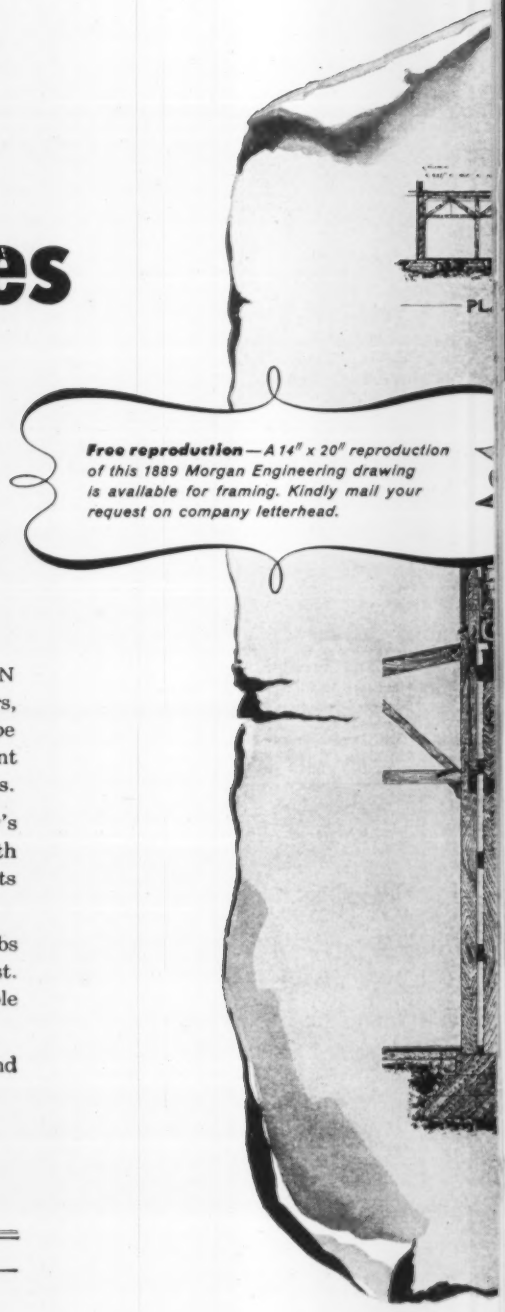
uniform wall thickness and size
uniform strength and toughness



For bonus power, speed and dependability

Morgan cranes and mill equipment



Free reproduction—*A 14" x 20" reproduction of this 1889 Morgan Engineering drawing is available for framing. Kindly mail your request on company letterhead.*

Look back—Remember how often you have seen the name MORGAN on cranes, charging machines, blooming and slabbing mills, shears, saws and auxiliary mill machinery? Wherever great weights must be lifted or big blocks of metal are worked, you find Morgan equipment . . . at the the key spots in maintaining continuous-flow operations.

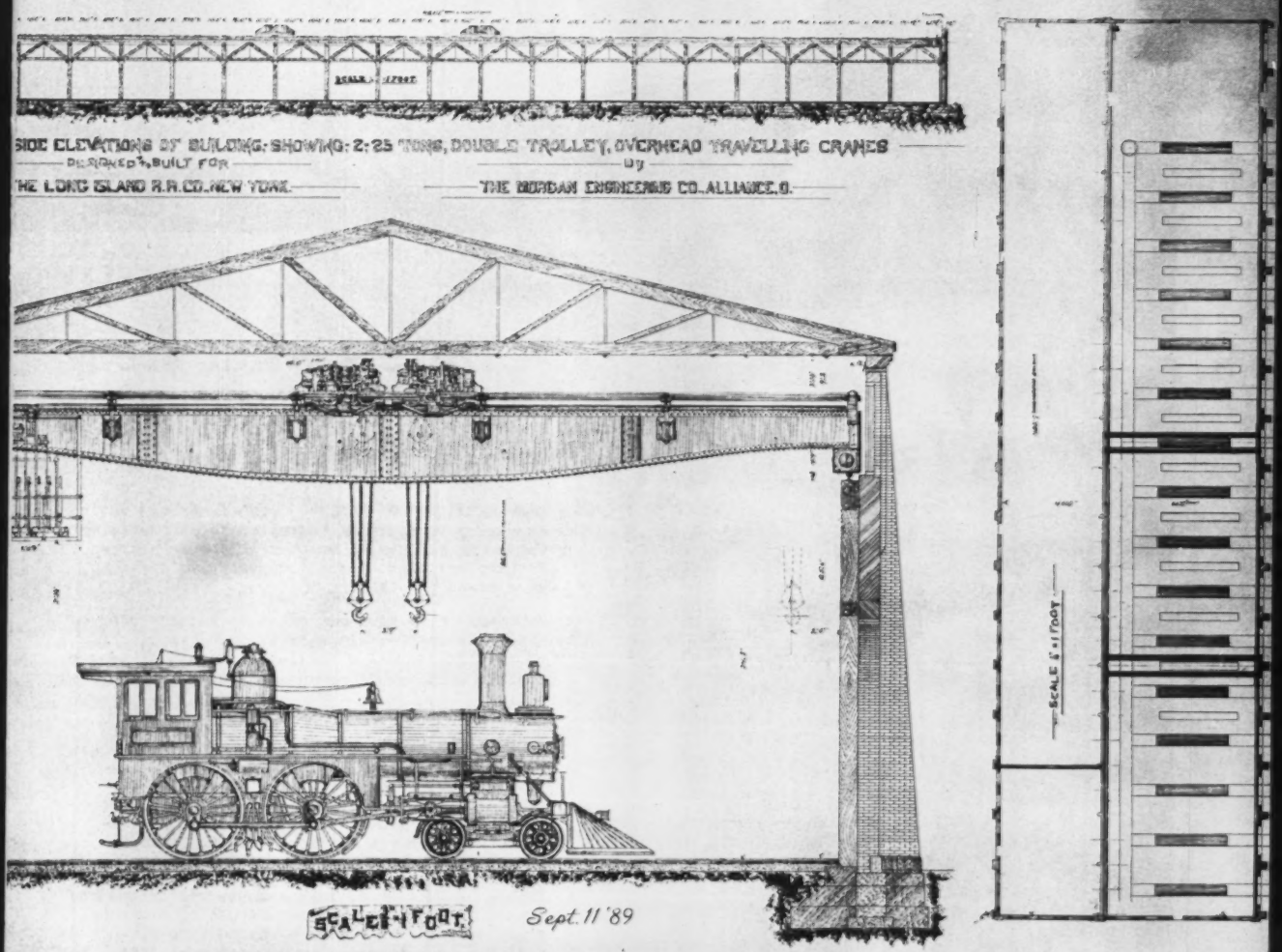
Inventive engineering and 89 years of close contact with industry's needs have resulted in greater speed, capacity and efficiency with Morgan-built products . . . lower operating and maintenance costs . . . absolute dependability.

Look ahead—When you buy equipment to handle the big tough jobs year after year, savings cannot be measured in terms of initial cost. They must be measured in terms of uninterrupted, more profitable production.

Let our representative help you plan to speed production and lower costs with Morgan cranes and mill equipment.

THE
MORGAN
ENGINEERING CO. *Alliance, Ohio*

Overhead electric traveling cranes, gantry cranes, open hearth special cranes, plate mills, blooming mills, structural mills, shears, saws and auxiliary equipment.


SIDE ELEVATIONS OF BUILDING SHOWING 2-25 TONS, DOUBLE TROLLEY, OVERHEAD TRAVELLING CRANES
DESIGNED & BUILT FOR
THE LONG ISLAND R.R. CO. NEW YORK.
BY
THE MORGAN ENGINEERING CO. ALLIANCE, O.
SCALE 1 FOOT
Sept. 11 '89
SCALE 1" = 1 FOOT

***Today**—These 70-foot span Morgan cranes speed foundry operations. Each crane has a 125-ton main hoist and a 25-ton auxiliary hoist.*

Here's what steel Kaiser

COMPARATIVE ENDWALL TRIAL "... had inspected walls day prior to accident and noted Kaiser Periclase Chrome Metal Encased Brick sections were plumb, in line and tight whereas competitive sections were bowed and leaking."

BACKWALLS "... having tremendous success with Kaiser Chrome Periclase Brick in backwalls ... on rebuild, gave instructions to leave it in for another campaign."

HOT TAP HOLES "... averaging between 20 and 25 heats with Permanente 165 on the 300-ton furnaces, where competitive mix previously gave 3 to 5 heats."

ENDWALLS "... Panels of Kaiser Periclase Chrome Metal Encased Brick went 402 heats while competitive panels in the same campaign were replaced at 265 heats."

BOTTOM PERFORMANCE "... Permanente 165 bottom has tapped 413 heats with delay figure of 3 minutes while competitive bottom - rammed five days earlier - has tapped only 360 heats with an average delay figure over bogey of 11 minutes."

ENDWALLS "... Furnace finished its third campaign using Kaiser Periclase Chrome Brick endwall for a total of 562 heats. Other furnaces using competitive brick usually lasted only 200 heats - one campaign."

industry users are saying about Basic Refractories

One of the most significant things about these statements from Kaiser Chemicals customers is that each of them illustrates a *new performance or production record* made possible by changing to a Kaiser Chemicals basic refractory product.

Why this uniform superiority?

Kaiser Chemicals refractories are *especially designed* for peak performance in specific applications in open hearth and electric steel furnaces. Each is a specially-developed composition . . . each is backed by more than 15 years of continuous research and development.

The uniform composition of Kaiser Chemicals refractories—your guarantee of dependability—is assured by Kaiser Chemicals fully-integrated facilities, controlling quality from initial production of sea water magnesia to assistance in final installation at your mill.

Call or write Kaiser Chemicals Division, Dept. S7243, Kaiser Aluminum & Chemical Sales, Inc., at any of the Regional Offices listed below:

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KAISER CHEMICALS BASIC REFRACTORIES FOR THE STEEL INDUSTRY:

Kaiser **PERICLASE** Brick (D-S)
Kaiser **PERICLASE-CHROME** Brick
Kaiser **CHROME-PERICLASE** Brick
Permanente 165 Ramming Mix
Permanente 84 Ramming Mix

Kaiser Chemicals

Pioneers in Modern Basic Refractories

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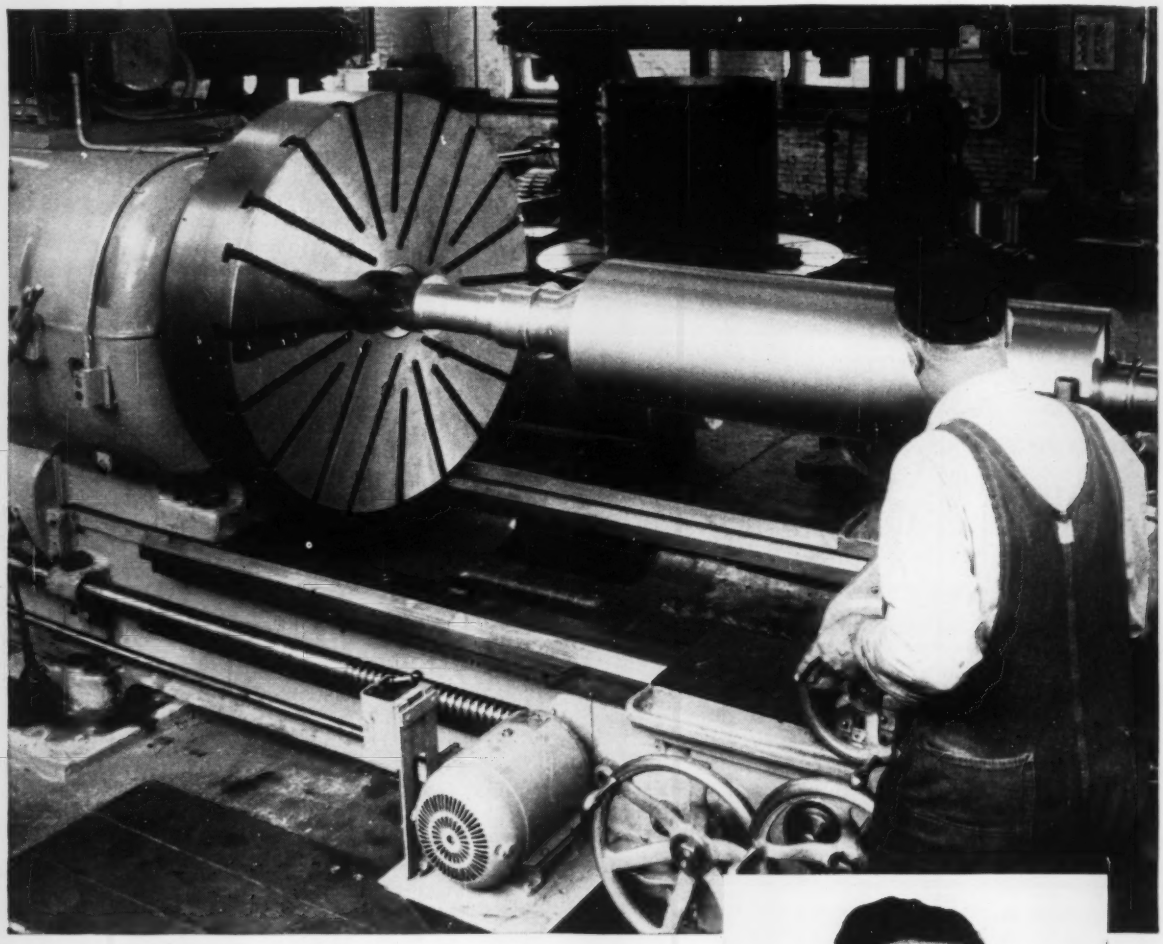
MAGNESITE • PERICLASE • DEADBURNED DOLOMITE • ALUMINAS



"Standard Steel castings and forgings play an important role in the 'New Look' at Vulcan Iron Works"

We at Standard Steel Works feel justly proud of the fact that our castings and forgings play "an important role" in both the quality and service which our several hundred customers are rendering to *their* customers. Vulcan Iron Works is typical of our customers—it consistently meets the quality and delivery requirements of its customers, and knows it can rely on us to help maintain its leadership as rotary kiln manufacturers.

Why don't you present your next forging or casting requirements to us. You too will find that when we at Standard Steel Works say that we give equal emphasis to quality *and* service to our customers, we mean what we say. Write Dept. 2-J.

"When the new management took over at Vulcan, it immediately recognized the importance of better customer relations through faster deliveries and lower selling costs. Standard Steel's prompt service and quality products are helping Vulcan realize these objectives," says Mr. William J. Davis, plant superintendent, Vulcan Iron Works, Wilkes-Barre, Pa.

Standard Steel Works Division

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BURNHAM, PENNSYLVANIA

Rings • Shafts • Car wheels • Gear blanks • Flanges • Special shapes

CALENDAR
OF MEETINGS

Sept. 29-Oct. 3, National Screw Machine Products Association: Fall membership meeting, Broadmoor Hotel, Colorado Springs, Colo. Association's address: 2860 E. 130th St., Cleveland 20, Ohio. Executive vice president: Orrin B. Werntz.

Sept. 29-Oct. 2, Packaging Machinery Manufacturers Institute: Annual meeting, Cloisters, Sea Island, Ga. Institute's address: 342 Madison Ave., New York 17, N. Y. Executive director: Russell L. Sears.

Sept. 30-Oct. 1, Material Handling Institute Inc.: Joint industry fall meetings, Greenbriar, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

Oct. 1-5, Society of Automotive Engineers: Aeronautic meeting, aircraft production forum, and aircraft engineering display, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Oct. 2, American Iron & Steel Institute: Regional technical meeting, Penn Sheraton Hotel, Pittsburgh. Institute's address: 150 E. 42nd St., New York 17, N. Y. Secretary: George S. Rose.

Oct. 3-4, Refractories Institute: Fall meeting, Grand Hotel, Point Clear, Ala. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Avery C. Newton.

Oct. 3-5, Porcelain Enamel Institute: Annual meeting, Greenbriar Hotel, White Sulphur Springs, W. Va. Institute's address: 1145 19th St. N.W., Washington 6, D. C. Secretary: John C. Oliver.

Oct. 4-5, American Ceramic Society Inc.: Refractories Division meeting, Bedford Springs Hotel, Bedford, Pa. Society's address: 4055 N. High St., Columbus, Ohio. Secretary: Charles S. Pearce.

Oct. 6-10, Electrochemical Society Inc.: Fall meeting, Hotel Statler, Buffalo. Society's address: 216 W. 102nd St., New York 25, N. Y. Secretary: Henry B. Linford.

Oct. 6-11, American Trucking Associations Inc.: Annual meeting, Conrad Hilton Hotel, Chicago. Associations' address: 1424 16th St. N. W., Washington 6, D. C. General manager: Ray G. Atherton.

Oct. 7-9, American Society of Lubrication Engineers and American Society of Mechanical Engineers: Joint lubrication conference, Royal York Hotel, Toronto, Ont. Information: 84 E. Randolph St., Chicago 1, Ill. Administrative secretary: William P. Youngclaus.

Oct. 7-9, National Electronics Conference Inc.: Annual meeting and show, Sherman Hotel, Chicago. Conference's address: 84 E. Randolph St., Chicago 1, Ill. Executive secretary: J. S. Powers.

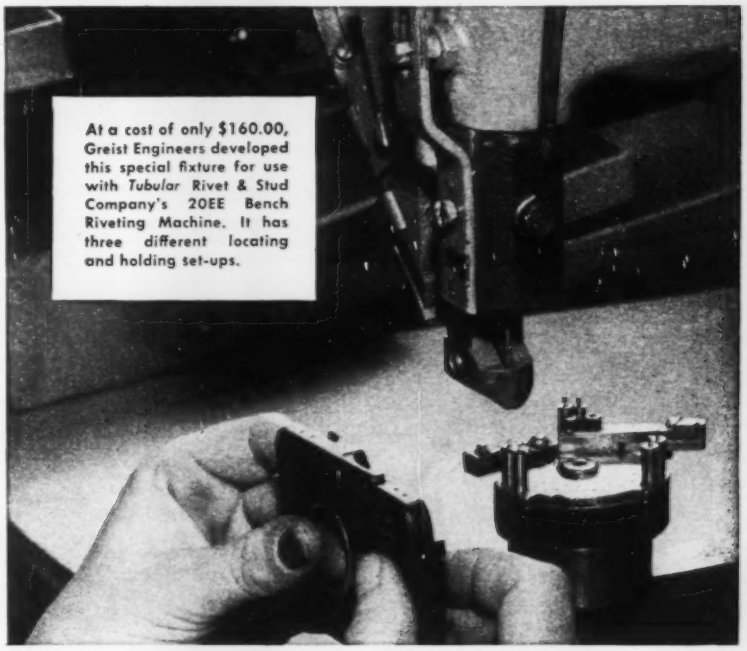
Oct. 7-10, American Institute of Steel Construction Inc.: Annual meeting, Del Coronado Hotel, Coronado, Calif. Institute's address: 101 Park Ave., New York 17, N. Y. Executive vice president: L. Abbett Post.

Oct. 7-11, American Institute of Electrical Engineers: Fall general meeting, Morrison Hotel, Chicago. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Oct. 9-11, Symposium on Vacuum Technology: Somerset Hotel, Boston. Sponsor: Committee on Vacuum Techniques, Box 1282, Boston 9, Mass.

Oct. 9-11, Gray Iron Founders Society Inc.: Annual meeting, Drake Hotel, Chicago. Society's address: National City-E. 6th Bldg., Cleveland 14, Ohio. Executive vice president: Donald H. Workman.

MAKE ASSEMBLY PAY PROFITS



At a cost of only $160.00, Greist Engineers developed this special fixture for use with *Tubular* Rivet & Stud Company's 20EE Bench Riveting Machine. It has three different locating and holding set-ups.

Tubular's RIVETERS HELP *GREIST**

Versatility Plus Ingenuity

Greist uses ***Tubular's*** Rivets and Riveting Machines because their versatility is limited only by the ingenuity of the user. In this particular application, the special fixture eliminates two machines and permits one operator with one machine to do the work of three. By simply positioning the work in the fixture and pressing two trip buttons, the riveting head automatically engages, feeds and fastens the assembly in two places. The obvious savings helped Greist pay off their modern $3 million plant in three years.

*GREIST of New Haven

The Greist Manufacturing Company not only makes the world's finest sewing machine attachments but has specialized in metal stamping and assembly since 1871. Some of the best light assemblies in America are produced by Greist.

TUBULAR of Quincy

If profits are important in your assemblies and riveting is your method of fastening, now is the time to investigate ***Tubular's*** Rivets, and ***Tubular's*** Automatic Riveting Machines. They can feed and set as many as 12 different rivets on different planes in one operation at the same time. Send us a drawing or work sample today.

SEE US AT NATIONAL METAL SHOW · CHICAGO · BOOTH 1779

Tubular Rivet & STUD COMPANY
WOLLASTON (QUINCY) 70, MASS.

FASTEN AUTOMATICALLY BETTER and FASTER with TUBULAR'S RIVETS and MACHINES

MIDWEST OFFICE & WAREHOUSE — CHICAGO

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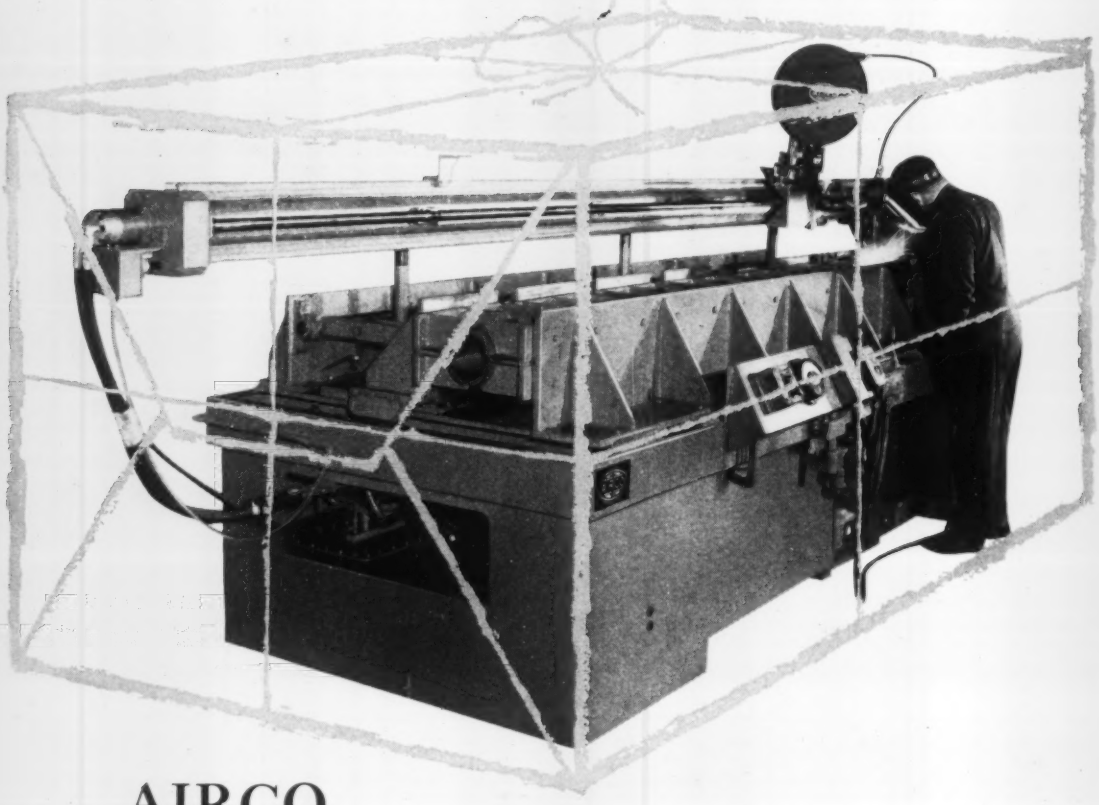
See your local classified directory for phone numbers

Manufacturer of heat treating equipment using an Airco machine welding installation to fabricate all-sheet alloy radiant furnace tubes used in annealing furnaces. The "package" includes all welding equipment, fixtures and controls tailored to specifications to produce welds automatically of the size, quality, type and speed required.



AIRCO PACKAGED MACHINE WELDING

Airco's Machine Welding Department can relieve you of many of the problems involved in installing an automatic welding operation in your plant. This welding-and-engineering service custom engineers automatic welding operations to your product design. Airco designs, constructs and installs all welding machine tools. Airco selects the most suitable welding equipment for the job, supervises installation, works out "bugs," and trains your employees in the operation of the equipment. You get a completely engineered "package."

Airco accepts full responsibility until the system is operating to your complete satisfaction. Airco's Machine Welding Department has already completed over 36 projects covering a wide range of automatic welding operations. For more information, write to J. H. Berryman, Machine Welding Department, at the address below.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND . . .

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Consistent Quality Has Benefits for You

The reputation of Roebling high carbon flat spring steel is based on two uncompromising facts: its unexcelled dimensional and mechanical uniformity.

They are qualities that contribute immediately and directly to *your* increased production rates and decreased rejects.

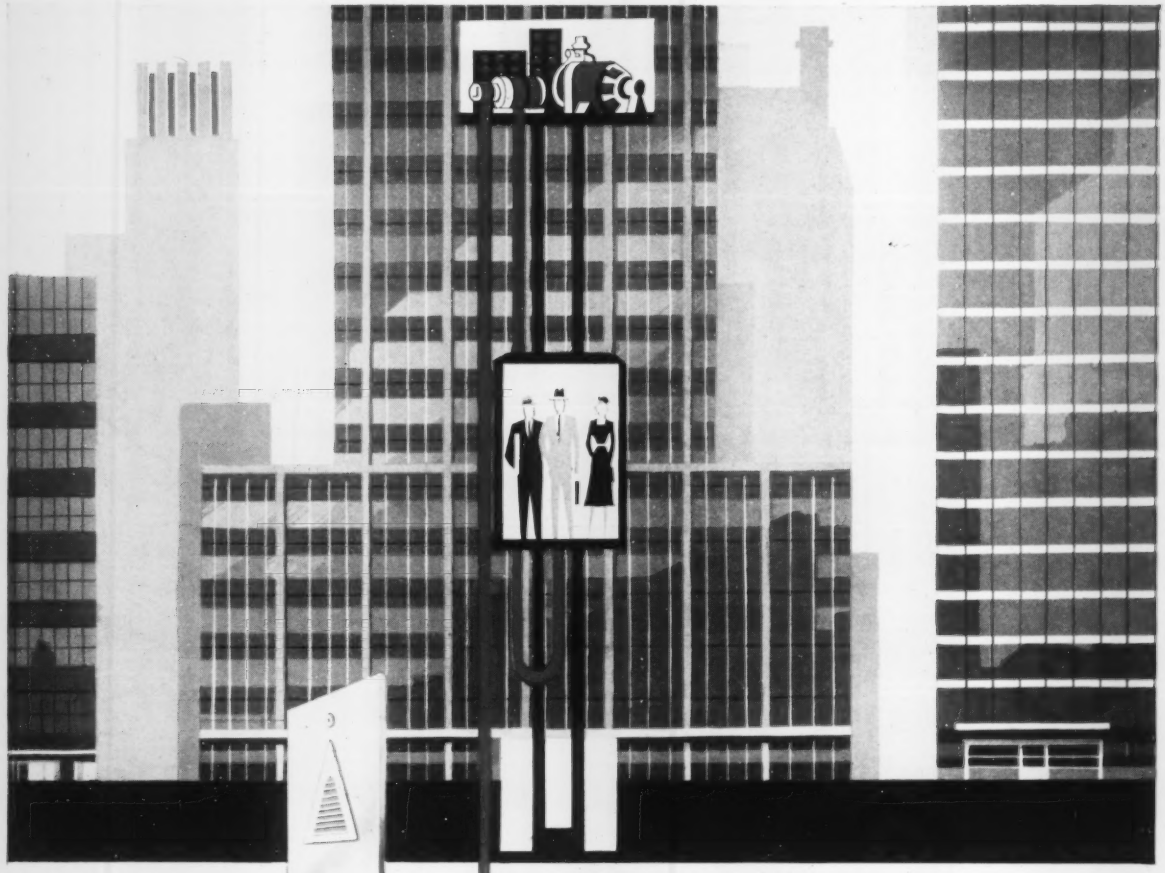
You are taking advantage of a collection of benefits when you specify Roebling. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling high carbon flat spring steel is used for a wide variety of parts.

ROEBLING

Branch Offices in Principal Cities · Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it



Automatic elevator system similar to that installed by Westinghouse Elevator Division in Seagram's new Bronze-sheathed building at 375 Park Avenue in New York.

Add COPPER

... and they run themselves !

Elevators, the newest automatic ones, show you some of the electronic marvels made possible by Copper. (If it's electronic, there's usually Copper in it.)

Because *Copper* conveys the electrical impulses to transmit signals, elevators are dispatched automatically to where they are needed, skip floors when there is no more room, close their doors politely and safely, never give passengers "that sinking feeling."

When you step in, Copper enables a phantom voice to warn: "Stand back from the door, please." In a department store, the voice says: "This car down," even announces the merchandise on each floor. In a hotel, it calls out the floors.

Copper "nerves" enable control mechanisms to "think," so elevators are returned to the first floor at night, lights are turned out, motor-generator equipment shut down to save power.

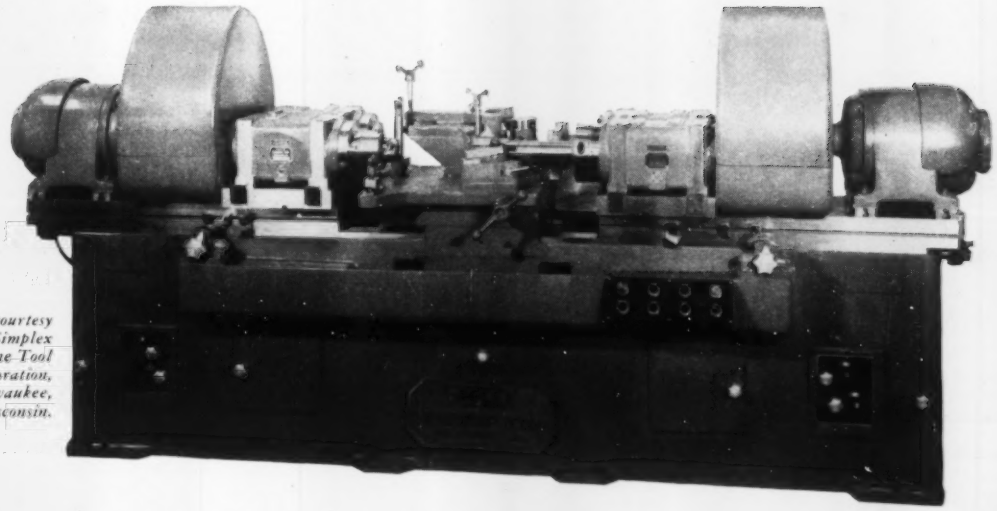
America's electronic future will require Copper . . . and the Copper Industry will see to it that an ample supply is maintained to meet the need as it arises.

DO YOU MANUFACTURE ELECTRONIC COMPONENTS? You'll find Copper a highly "workable" material. Makes the most complicated shapes relatively easy to produce, reduces cost. Reduces product-bulk, too, through printed circuits and other miniaturization. And gives you an extra dividend in high-cash-recovery scrap!

COPPER • BRASS • BRONZE

in over 40 Standard Alloys!

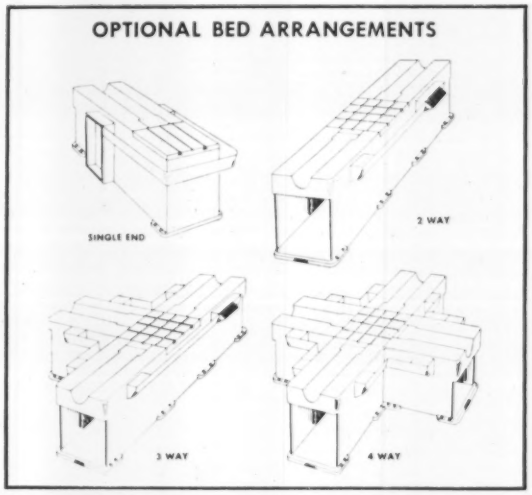
For data on Copper in other electronic applications, write to the Copper and Brass Research Association, 420 Lexington Ave, New York 17, N. Y.



Photos courtesy of Simplex Machine Tool Corporation, Milwaukee, Wisconsin.

VERSATILITY FOR MACHINE TOOLS

Welded design does it at less cost



These precision boring machines can have one to four boring heads. The beds may vary in length . . . depending on the customers' needs. Such versatility in design and manufacture is made possible with welded steel . . . because:

- **A welded base design can be easily and quickly modified since there are no patterns involved.**
- **Less material is needed since steel is three times stronger than iron, 2½ times as rigid . . . yet costs a third as much per pound.**
- **Less machining, less finishing is needed.**

Basic advantages like these can be applied to many products. A Lincoln engineer who is backed by 45 years of Lincoln cost-cutting experience, will gladly show you how to benefit.

Write for Weldesign Bulletin, available to product designers.

THE LINCOLN ELECTRIC COMPANY

Dept. 1632, Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

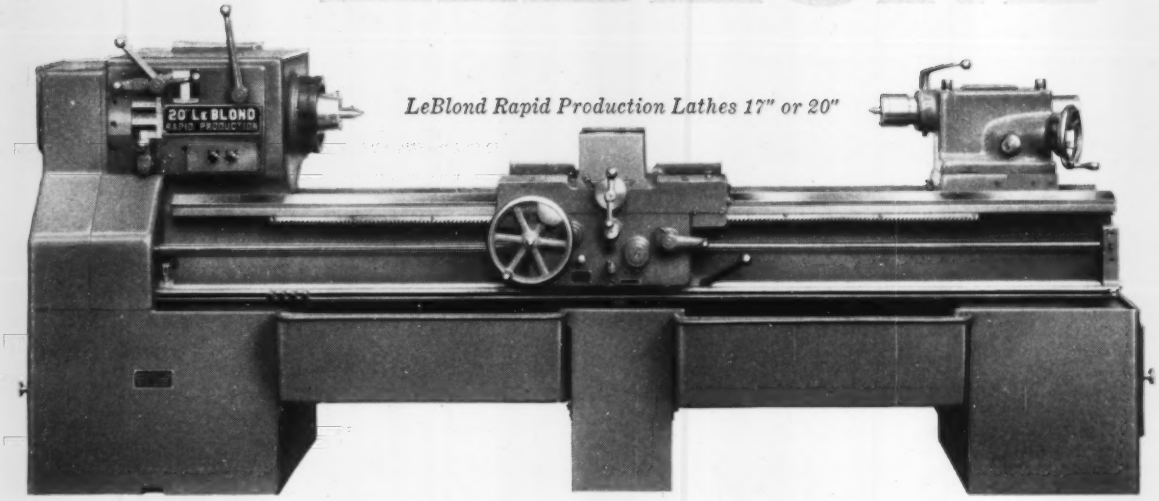
When steel is three times stronger than iron

Has much more versatility

Yet costs much less

WHY aren't your products designed for welded steel?

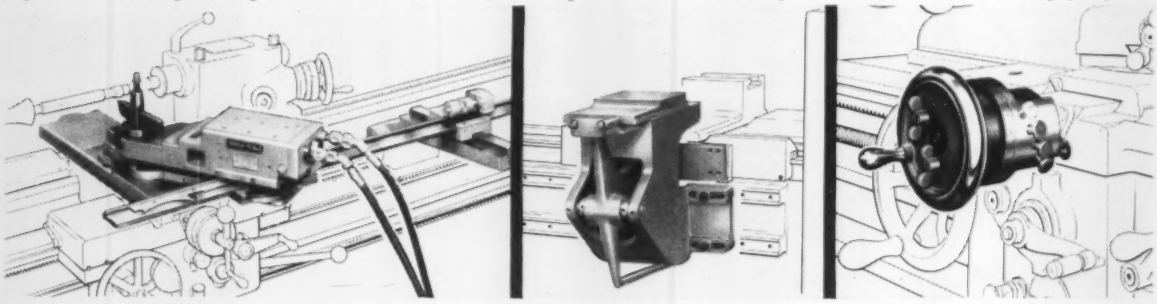
another ALL NEW LeBLOND



LeBlond Rapid Production Lathes 17" or 20"

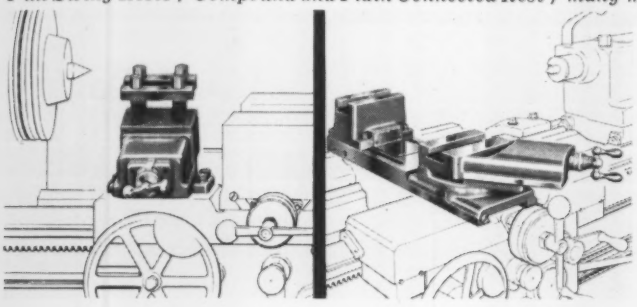
a low cost manufacturing lathe

Hydra-Trace® duplicating attachment / Automatic Facing Attachment / Multiple Positive Cross Feed Stops, Style B



with exactly the custom features you want

Full Swing Rests / Compound and Plain Connected Rest / many more useful attachments. Write for Bulletin RP-220G



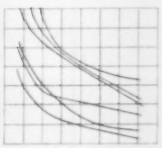
World's Largest Builder of A Complete Line of Lathes for more than 70 years

LeBLOND of Cincinnati

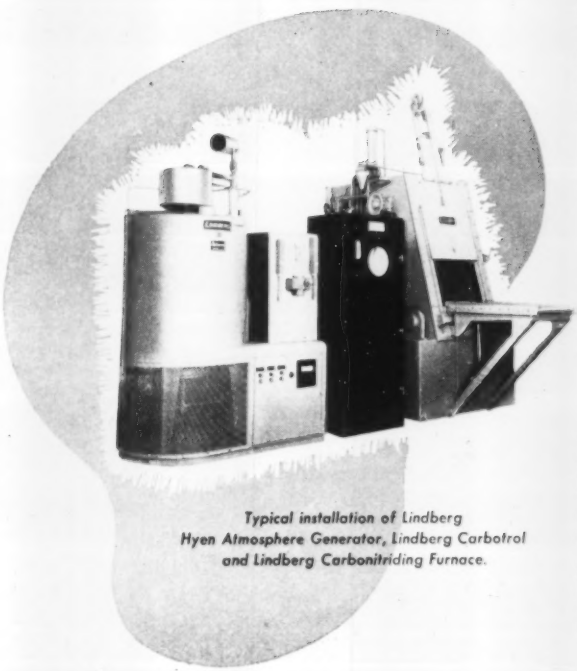
THE R. K. LEBLOND MACHINE TOOL COMPANY
Cincinnati 8, Ohio

What every good metal man should know about CARBONITRIDING

First of all, it is a good idea to know what equipment will do the best carbonitriding job for your specific requirement. And the best way to find this out is to talk over your problems with the people who have consistently developed the methods and equipment for better, more dependable, more economical carbonitriding results. That would be Lindberg.

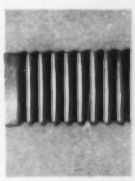


Let's look at the record. Lindberg's contributions to carbonitriding and carburizing go far beyond just the building of furnaces to do it. It covers the development of controlled atmosphere generators, the creation of dew point equilibrium curves to establish proper atmosphere values for type of steel and temperatures involved and the exclusive Lindberg Carbotrol to maintain these values automatically in production.



Typical installation of Lindberg Hyen Atmosphere Generator, Lindberg Carbotrol and Lindberg Carbonitriding Furnace.

Then there is the invention of the "dimple" vertical radiant tube which gave new efficiency and economy to fuel-fired atmosphere furnaces. Lindberg's exclusive CORRTHERM electric heating element made practical the use of electricity in atmosphere furnaces.



Add to this our record over the years of building a broad variety of carbonitriding and carburizing furnaces, big ones, small ones, manuals, automatics, fuel-fired, electric, and it seems it's just good common sense to bring your heat treating problems to us. Just get in touch with the Lindberg Field Representative in your locality or write:

LINDBERG ENGINEERING COMPANY

2441 West Hubbard St., Chicago 12, Illinois

Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.

LINDBERG

heat for industry

Here's the work-horse

for many a carbonitriding job

This furnace has ***complete automatic cycle*** *and quench control.*

This is the most widely-used carbonitriding furnace of all. Day in and **day out production** of tons and tons of work has proved this furnace's **ability to increase** production quality and volume and reduce costs. It **is a versatile** furnace, too, not only for carbonitriding but for other uses, carburizing, annealing, carbon restoration and many hardening applications.

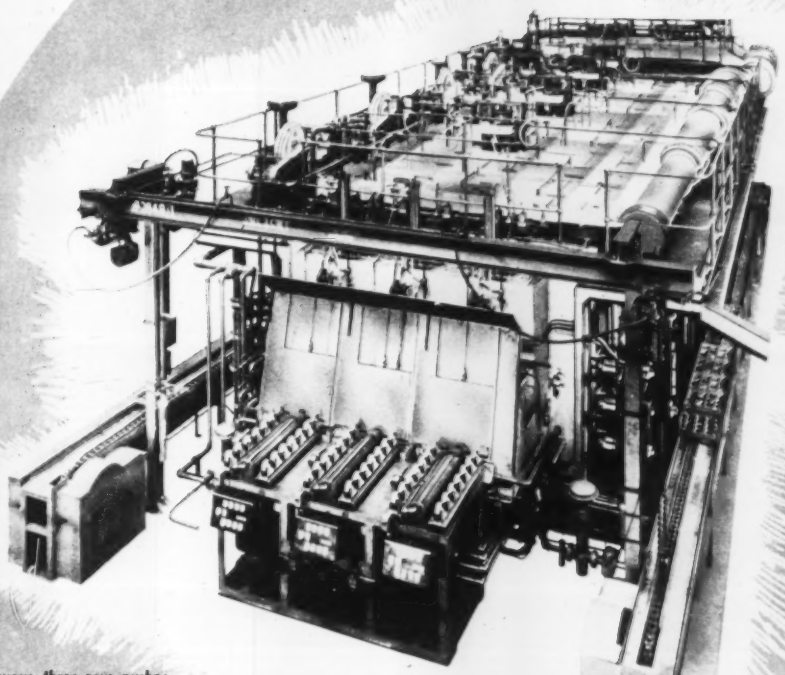
This type of furnace is available for both manual and automatic operation. It can be equipped either with Lindberg's efficient new vertical radiant tubes for fuel-firing or for electric heating with Lindberg's revolutionary new CORRTHERM element.

Versatile as this furnace is, we don't claim it is the best solution to *every* carbonitriding problem. But, whatever your need may be, talk it over with Lindberg. Our engineers, as they have done in so many instances, will recommend a sound answer—design it, build it, even field-install it if you wish. Just get in touch with the Lindberg plant or the Lindberg Field Representative in your locality. Lindberg Engineering Company, 2441 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.

LINDBERG

heat for industry

We put the Big Heat on with this one!



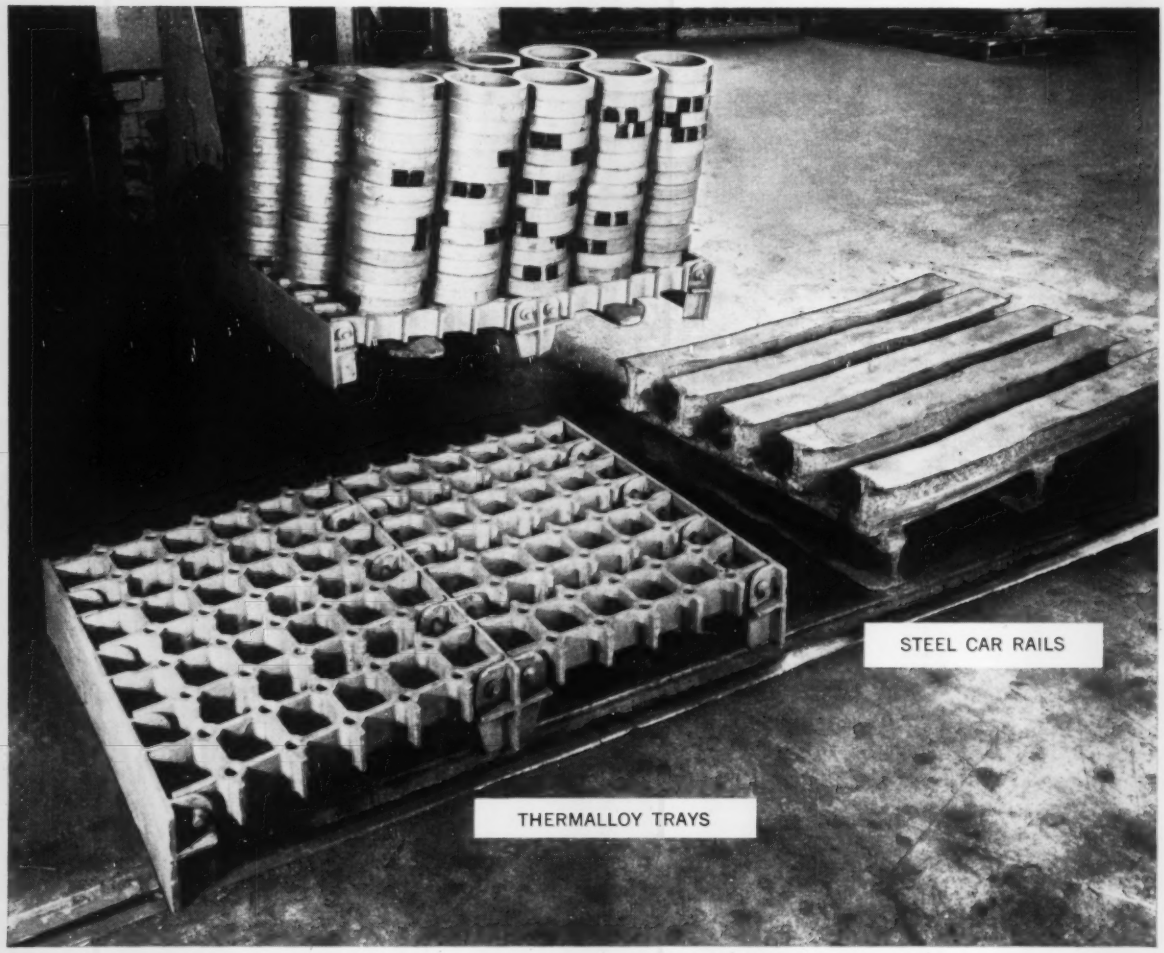
A Lindberg continuous three-row pusher carbonitriding and carburizing furnace, gas-fired with vertical radiant tubes. Can also be built with CORRTHERM electric heating elements.

If your carbonitriding or carburizing problem is a big one, better talk it over with Lindberg. The broad experience of our engineering staff in the development of methods and equipment for every heat treating function offers a pretty sure promise of the most practical answer to it. Particularly where field installation is advisable our combination of engineering know-how and sound installation experience is especially valuable to you.

Whether your requirement will call for the installation of a big baby like the one shown above or a complete heat treating department of smaller units, Lindberg will handle the job all the way. We specialize in "turn-key" installations, covering everything from design and engineering to the finished ready-to-go-to-work job complete with all the construction needed to fit the heat treating equipment into your production processes. Pass your problem to Lindberg. Get in touch with Lindberg Industrial Corporation, 2321 West Hubbard Street, Chicago 12, Illinois, or your local Lindberg Field Representative. Los Angeles Plant: 11937 S. Regentview Ave., at Downey, California.

LINDBERG

heat for industry



Thermalloy* Heat-Resistant Trays Cut Costs for SKF Industries

At SKF Industries in Philadelphia, steel forgings are annealed in a car-type furnace at temperatures between 1450 and 1650 degrees F. Steel car rails were used to support the forgings in the furnace. But these warped and scaled after short service and became useless.

At the same time, SKF tried the specially designed trays of Thermalloy "30" shown above. These trays have given *six times the service life* obtained from the rails—and are still in use, with many more months of service left. In a cost comparison with the steel rails, SKF found that the Thermalloy trays were less expensive, considering *only* their service life to date.

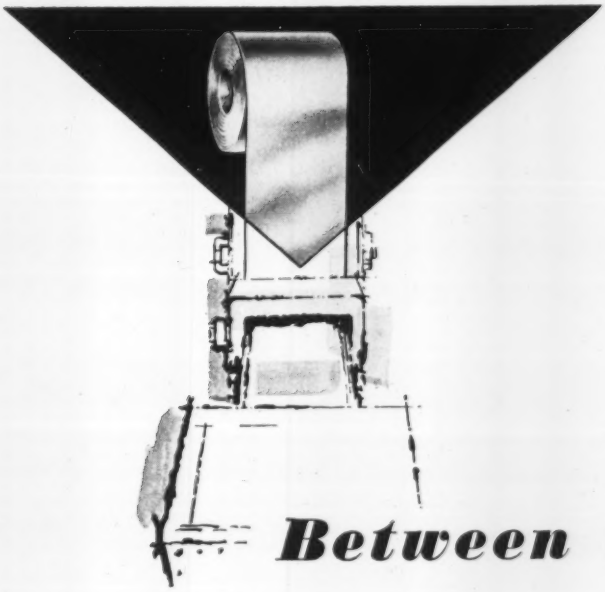
Thermalloy heat-resistant alloys and Electro-Alloys' design know-how are providing longer service life in scores of heat-treat applications and are saving money for users.

Whatever your heat-treat problem, it pays to contact Electro-Alloys. For further technical information on Thermalloy trays and fixtures, call your nearby Electro-Alloys representative or write for Bulletin T-227. Electro-Alloys Division, 8049A Taylor St., Elyria, Ohio.

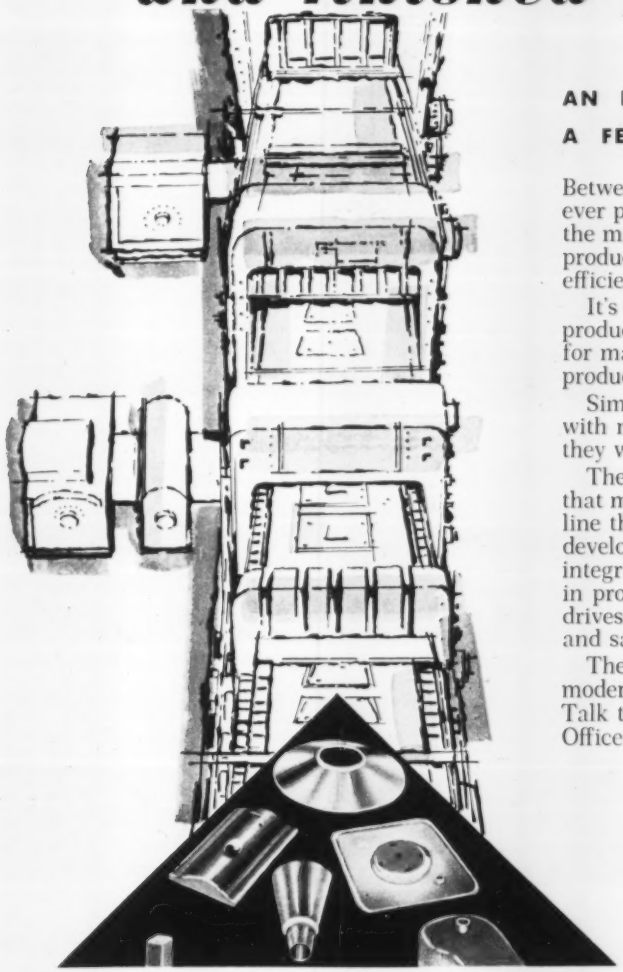
*Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION Elyria, Ohio



Between material and finished part . . .



AN IDEA THAT MAKES SENSE —
A FEDERAL-WARCO PRODUCTION LINE

Between material and finished part is the ever present problem of bringing together the machinery necessary to perform all production on operations as speedily and efficiently as possible.

It's here, the Federal-Warco, this packaged production line has proved to be the answer for many of the nation's foremost production experts.

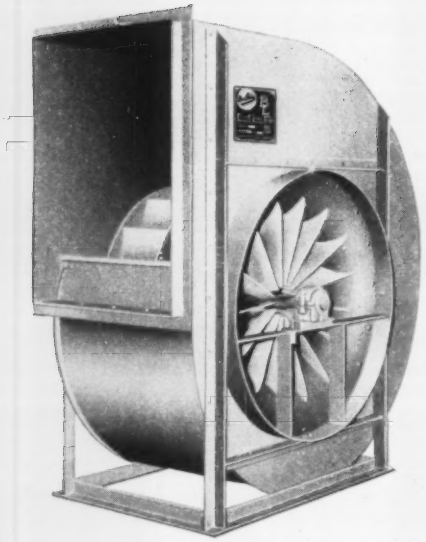
Simply provide Federal-Warco engineers with material and part information and they will develop a line to do the job.

The advantages: One source responsibility that means faster, more thorough service; a line that is 100% harmonic, all stations developed especially to work in synchronization; integrated and automated handling of work in process; the possibility of utilizing common drives and bases, reducing operating costs and saving valuable floor space.

There is much more. Why not look into this modern method of production line manufacture? Talk to your Federal-Warco representative. Offices in all leading industrial areas.

Federal / Warco
PACKAGED
PRODUCTION LINES

123 THE FEDERAL MACHINE AND WELDER COMPANY • WARREN, OHIO



(Buffalo Type "BL" Fan)

HOW "BUFFALO" FANS GIVE YOU *MORE ECONOMICAL* MILL MOTOR COOLING

Ventilation for motor rooms and motors presents a potent challenge to any fan. It's a continuous high-temperature air moving operation... 24 hours a day, day in and day out, year in and year out.

"Buffalo" Fans are built to stand up under this kind of punishment. Take the type "BL" Fan, shown above. Its rugged, durable construction features insure you a long life of peak heavy-duty performance with a minimum of maintenance.

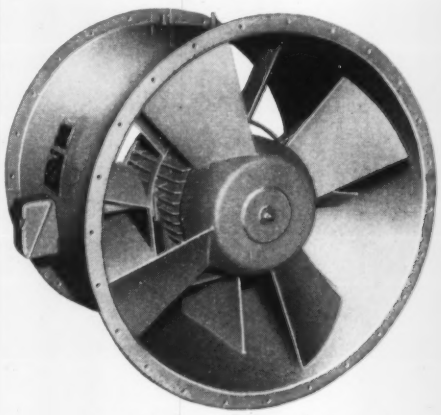
These "Buffalo" features include over-sized, self-aligning bearings — heavy plate housing — rigid plate wheel with husky hub, back plate and die-formed blades. You're sure of full-rated-delivery-on-the-job because of the exclusive "Buffalo" design of the complete unit... from fixed inlet guide vanes through the wheel to the discharge.

These are all good reasons why the "Buffalo" Type "BL" Fan will give you more economical and reliable mill motor cooling. Contact your nearest "Buffalo" Engineering Representative for details, or write for Bulletin F-102.

If your mill motor cooling fans must be placed in a confined area, "Buffalo" Axial Flow Fans are the ones to specify. Their light weight, rigid construction permits economical installation. They effect important space-savings because they fit in snugly to walls, ceilings, or floors. Ideally suited to duct or through-the-wall installation. Either direct or belt drive.

Whether you install your own axial flow fan, or have it installed as a component, be sure you specify "Buffalo" for maximum reliability and economy. Write today for Bulletin 3533-H.

Engineered into ***every*** *"Buffalo" Fan is the famous "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*



(Buffalo Axial Flow Fan)

"Buffalo"

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT
COOLING HEATING PRESSURE BLOWING

You get more than Quality when you specify Jessop high-speed steel

When you need a special steel that cuts fast and deep and stays sharp even when very hot, it's pretty certain you'll ask for "high-speed." And if you're looking for assurance of top quality, you are apt to name by name a company that pioneered in the business of making high-speed steels, contributed materially to their development, and has lab and quality-control techniques well ahead of the field. You're apt to specify Jessop.

But you get more than quality when you specify Jessop high-speed steel. You get good service for two very good reasons. First, Jessop has the capacity to supply demand promptly. It can produce more high-speed products, (namely sheets, plates, bars, forgings, castings and special shapes), at one location than any other company in America. And second, Jessop wants all the high-speed steel business it can get and bends over backwards to please its customers. Send in an order and you'll find out.

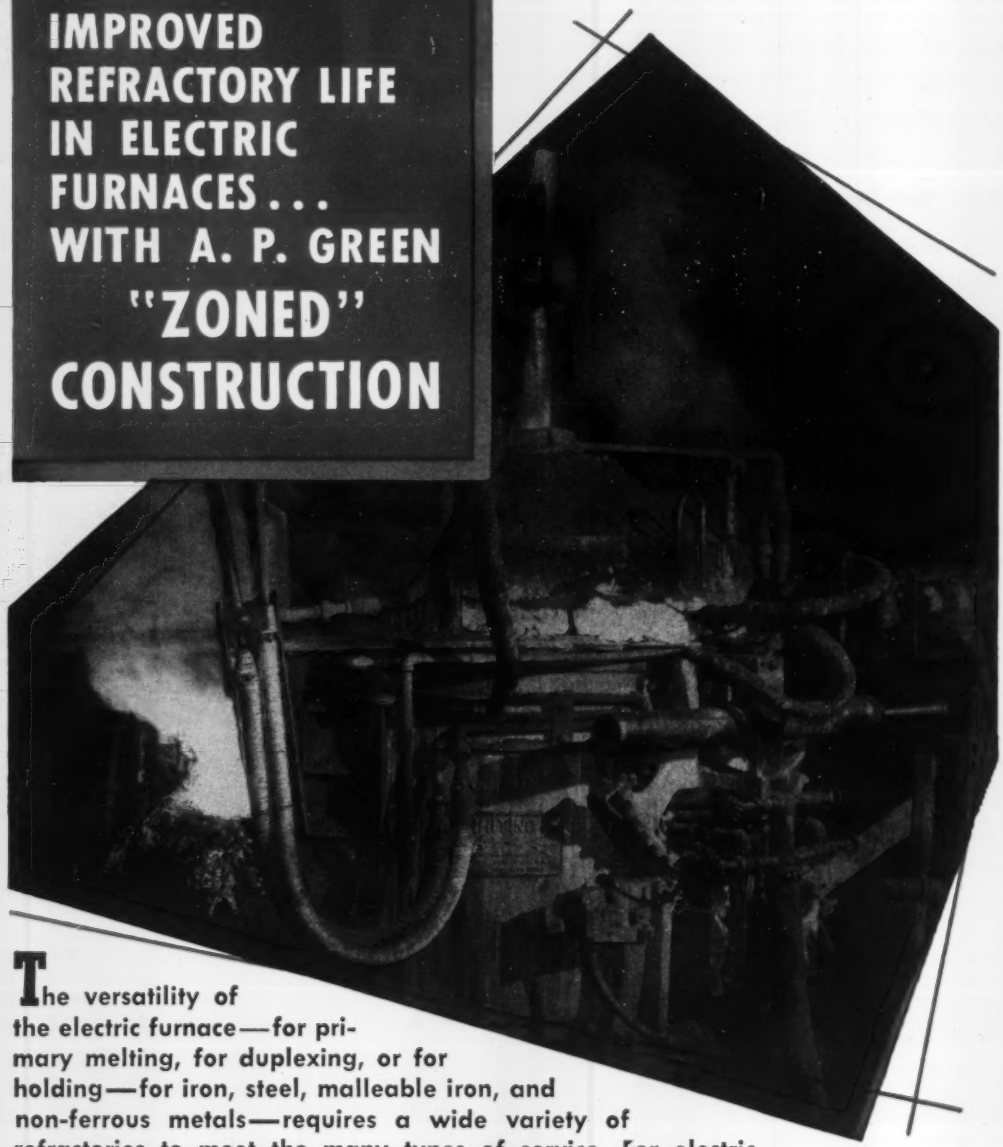
JESSOP

STEEL COMPANY · WASHINGTON, PA.

OFFICES IN PRINCIPAL CITIES

Wholly-owned subsidiaries: Jessop Steel of Canada Limited, Washington, Canada; Jessop Steel International Corp., Chrysler Building, New York, New York; Green River Steel Corporation, Owensboro, Kentucky

IMPROVED REFRACTORY LIFE IN ELECTRIC FURNACES... WITH A. P. GREEN "ZONED" CONSTRUCTION



The versatility of the electric furnace—for primary melting, for duplexing, or for holding—for iron, steel, malleable iron, and non-ferrous metals—requires a wide variety of refractories to meet the many types of service. For electric furnace roofs, A. P. Green super duty brick, high alumina brick, and monolithic refractories have performed outstandingly in many applications. Even in a specific installation, the service life of a roof may often be materially increased by the judicious combination of several types of refractories. Such "zoned" construction offers maximum economy.

For detailed information on service and specific recommendations —contact your local A. P. Green Representative or write

A. P. Green REFRACTORY PRODUCTS

A. P. GREEN FIRE BRICK CO.

Mexico, Missouri, U. S. A.

Plants: Mexico, Mo.—Woodbridge, N. J.—Sulphur Springs, Texas—Jackson, Oak Hill, South Webster, Ohio—Philadelpphia, Pa.—Troy, Idaho

In Canada: A. P. GREEN FIRE BRICK COMPANY, LTD. Toronto 15, Ontario

Would you substitute price for dependability?

There is no substitute for dependability when choosing a producer of stainless steel.

Requirements are becoming more and more critical every day. Meticulous attention to every detail of production is essential. There can be no short-cuts.

You can depend on Carlson to produce the highest quality stainless steel plate; to maintain large stocks of finished plate and heads; and to continue a long record of efficient service.

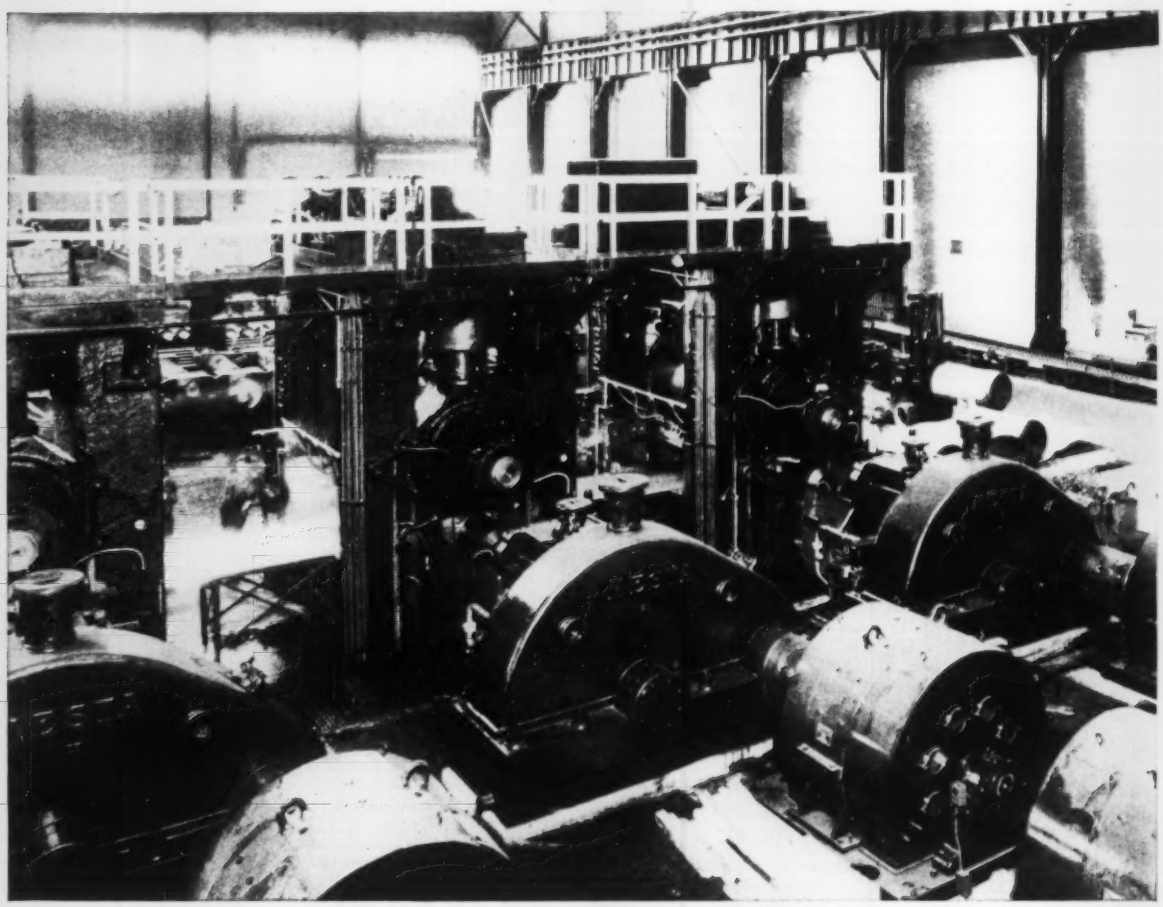
Most of all, you can rely on our established policy of delivering the highest quality stainless steel at competitive prices. And we never make special arrangements that deviate from this policy.

G.O.CARLSON *Inc.*

Stainless Steels Exclusively

THORNDALE, PENNSYLVANIA

PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)



PROTECT REDUCTION GEARS

against Heaviest Loads

It's the polar additives in *Texaco Meropa Lubricant* that *keep* it clinging to gear teeth and bearing surfaces even when gears are working under severe conditions of heat, pressure, or moisture.

What's more, the extreme pressure properties of *Texaco Meropa* give it a tougher, longer lasting lubricating film that effectively protects against shock or heavy steady loads. And it resists oxidation and thickening—won't foam or separate. All good reasons why gears run smoother, last longer, and maintenance costs stay low.

There is a complete line of Texaco Lubricants designed to help you get the most efficient performance from your equipment. A Texaco Lubrication Engineer will be glad to suggest those best suited to your needs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

STEEL
September 30, 1957

Metalworking Outlook

Crossroads for Labor

The course of organized labor may take another road because of a Miami, Fla., meeting that begins today (Sept. 30). The Teamsters are convening to elect officers. If James R. Hoffa or anyone else not acceptable to the AFL-CIO is elected and if there are no real efforts to clean house, the Teamsters will be kicked out of the big federation—formally at its December convention, but actually right away. As an independent, the truckers would spark a labor civil war. They'll try to form a transportation union of truckers, longshoremen, and railroaders, which would be formidable opposition to the AFL-CIO.

The Rarick Rebellion

The Rarick Rebellion in the United Steelworkers still has steam. Last February, insurgents couldn't elect Don Rarick president of the union, but they gave him a surprisingly strong vote. Meeting at a "convention" in Pittsburgh, they claim the total would be even higher now. Their objectives: Gain control of as many locals as possible to win a powerful voice in the union's 1958 convention. Change the union's constitution to make it more democratic. Run against President David McDonald again in 1961 when his term is up.

7.4 Cents in Cleveland

The weighted average wage increase negotiated in the Cleveland area since Jan. 1 is 7.4 cents an hour, excluding fringe benefits. So says Associated Industries of Cleveland, whose report has national significance because the northern Ohio area represents such a cross section of industry. AIC sees these trends: Tougher bargaining; more demands originating from international headquarters; more resistance by management.

Slichter Predicts

Harvard economist Sumner Slichter made these predictions last week:

- Democrats have a better than even chance of winning the 1960 presidential election.
- The fourth will be business' best quarter in 1957.
- The first half of 1958 will not rise above the closing levels of 1957 and could fall a little.
- The second half of 1958 will be stimulated by personal tax cuts (which will come by July 1, Dr. Slichter believes) and a slight easing of the Federal Reserve Board's money policy.
- Creeping inflation will become galloping inflation by 1961 if Democrats

Technical Outlook—Page 77 Market Outlook—Page 101

ease the money supply too much.

- The longer you look ahead, the better the economic outlook because of high government spending, better business methods, and the increasing number of different industries that have individual business cycles.
- Business cycles will be replaced by rolling adjustments; the chance for serious recession is remote.
- The booming '60s will result from research and development in industry which continues to create new consumer demand.

Aluminum Cans Score Breakthrough

Reynolds Metals Co. has signed a contract with Esso Standard Oil Co. to supply aluminum for 35 million to 60 million quart oil cans, a reported $3 million to $4 million transaction. In hailing the major development, officials of both companies pointed out a unique competitive feature: Empty cans will be salvaged and re-used in the production of aluminum. Sheets will be made at Reynolds' Listerhill (Florence, Ala.) plant. American Can Co. and Crown Cork & Seal Co. are expected to start production this year. Esso will pay the same price it does for cans made of conventional tin plate.

Transition in Aircraft

"Nothing cataclysmic has happened" to the nation's aircraft industry, insists Orval R. Cook, president of Aircraft Industries Association. He admits "important readjustments," but points out that the missile has the same three vital elements as the manned airplane—airframe, propulsion, and guidance. He predicts substantial cuts in subcontracting by airframe makers.

Big Decision for Mr. Wilson

Look for Defense Secretary Charles Wilson to make one more major decision before he turns over his job to Neil H. McElroy about Oct. 9. He will decide which intermediate range ballistic missile to concentrate on—the Army's Jupiter, the Air Force's Thor, or perhaps the best features of both. Russian announcements focus attention on the intercontinental units, but the intermediates with a range of about 5000 miles are more immediately obtainable for operation—perhaps within a year.

Straws in the Wind

Kaiser Aluminum & Chemical Corp. will spend about $80 million on expansion in 1958, compared with $200 million in 1957 . . . Dow Chemical Co. will spend $162 million on expansion in fiscal 1957 and will invest even more in the next fiscal year . . . Delaware & Hudson Railroad is experimenting with a resin plastic to glue tracks together.

LOOK MAC! THERE WAS ANOTHER CARBOMETER TEST IN THE WATER BUCKET!☆?
MAYBE 15 BAGS OF COAL WAS TOO MUCH!
KUEKES
THANKS TO—
HERB GAMMONS
OPEN HEARTH METALLURGIST
LORAIN WORKS
NATIONAL TUBE DIVISION U.S.S.

The Big Puzzle

WHY NOT DESCRIBE YOUR OPEN-HEARTH CARTOON IDEA AND SEND IT ALONG TO US?

The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

BASIC INCORPORATED 845 HANNA BUILDING • CLEVELAND 15, OHIO

Interlocked corners, curled collars, extruded holes, a severe draw—these operations and many more are represented by these parts for two meter boxes. Armco ZINCGRIP Steel was used for all parts because its tight zinc coating doesn't flake or peel.

Even After Severe Working Parts Stay Zinc-Protected with Armco ZINCGRIP Steel

Its tight zinc coating flows with the steel base during fabrication

A 21-year successful record in manufacturing plants proves that the special zinc coating on Armco ZINCGRIP® Steel withstands working. These severely fabricated meter box parts are good examples.

Despite operations that draw, form, pierce, and extrude this durable steel, the tenacious hot-dip zinc coating continues to protect the base metal—does not flake or peel. There are no zinc-bare spots on these meter boxes when they are placed in service.

Service Proved

A long record of service in hundreds of other manufacturing plants has established this fact: *Anything that can be done with sheet steel can be done with Armco* ZINCGRIP. You don't have to baby it in the shop.

If you would like more information about this special rust-resistant zinc-coated steel for severely fabricated products, just fill in and mail the coupon.

ARMCO STEEL CORPORATION
1927 Curtis Street, Middletown, Ohio
Send me your catalog on Armco ZINCGRIP Steel.

We make_____
Name_____
Firm_____
Street_____
City_____ Zone____ State_____

ARMCO STEEL CORPORATION

1927 CURTIS STREET, MIDDLETOWN, OHIO

Sheffield Steel Division • Armco Drainage & Metal Products, Inc. • The Armco International Corporation

ARMCO®

Needed: A Pricing Policy

The increasing competition for business, the pressure on prices, and the squeeze on profits are revealing an appalling lack of constructive pricing policies on industrial products.

The National Industrial Conference Board finds that only four out of 155 manufacturing companies it checked have definite policies in writing.

Forty per cent of the companies leave the pricing job to one man. In over half of the cases, this man is a sales executive; in the remainder, the president or someone else in top management is responsible.

Sixty per cent of the companies take group action in setting prices. The combination usually is the president and vice president in charge of sales, or top management and sales management.

There's no questioning the fact that pricing policies are in safe hands in many companies where judgment is left to one man. However, pricing decisions are in still safer hands if they are made by several people conversant with the multiplicity of influences now at work inside and outside the company.

Each influence, in turn, has many facets. Take inflation. Exceptional indeed is the man who has the time and experience to gage its devious influences on the economy, let alone his company. Mere mention of a few "causes" further illustrates the point: The failure of productivity to keep pace with higher wages won by labor (see Page 45), the heavy tax burden, government spending, the money supply situation.

Another danger of the limited viewpoint is that pricing factors at work within the company tend to be underestimated, even overlooked. We think too many pricing decisions are motivated only by the overwhelming desire to make sales. Such thinking practically ignores production costs. Profits often are an after-the-sale consideration.

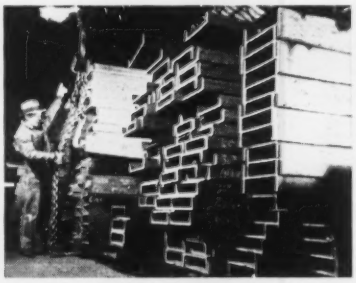
We think that nothing is more sorely needed today than realistic pricing policies determined by management as a group. Not only that, we think the policies should be clearly stated for those charged with their administration.

Irwin H. Such
EDITOR-IN-CHIEF

REPORT FROM RYERSON
on Services and Products in Stock

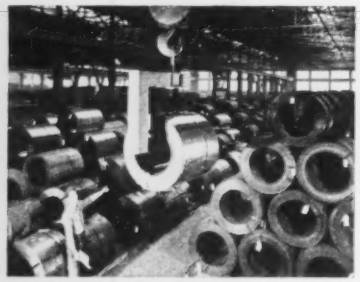
In addition to the products shown below, you can call on Ryerson for flame-cut steel shapes, fabricated steel for reinforced concrete or steel frame construction—many other products and services. And equally important are the specialists who carry out the Ryerson quality control program —see that customers specifications are *exactly* met, that every order is correctly filled and promptly delivered. As a result you get unequalled service and certified quality when your company calls Ryerson for steel, aluminum, industrial plastics and machinery.

CARBON STEEL & ALLOY BARS
Most complete range of types, shapes and sizes as well as largest tonnage.

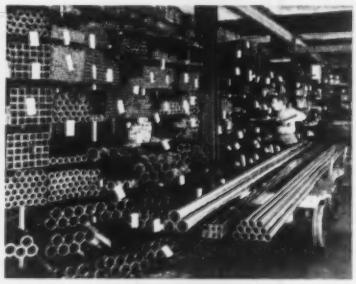


STRUCTURALS—I-beams, H-beams, channels, angles, tees and zees—all high quality steel to ASTM spec. A-7.

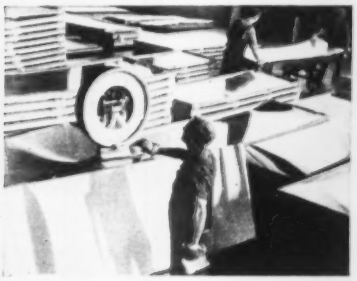
PLATES—14 types including special low carbon steel plates for forming and welding, leaded New E-Z-Cut, etc.



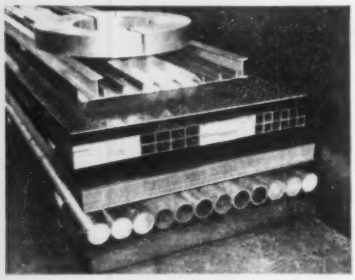
SHEET STEEL & STRIP—More than 20 different types in pattern sizes, cut-to-order sizes, strip coils, etc.



TUBING—Seamless and welded steel tubing—mechanical tubing, fluid line, pump cylinder and structural tubing.

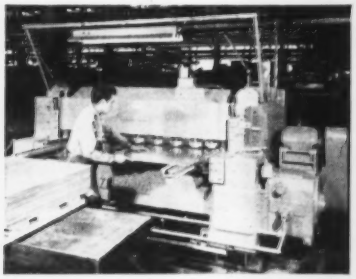


STAINLESS STEEL—Allegheny stainless in over 2,221 sizes, shapes, types, finishes: sheets, plates, bars, pipe, etc.



ALUMINUM—At many Ryerson plants —sheets, coils, plates, bars, tubing, architectural and structural shapes, etc.

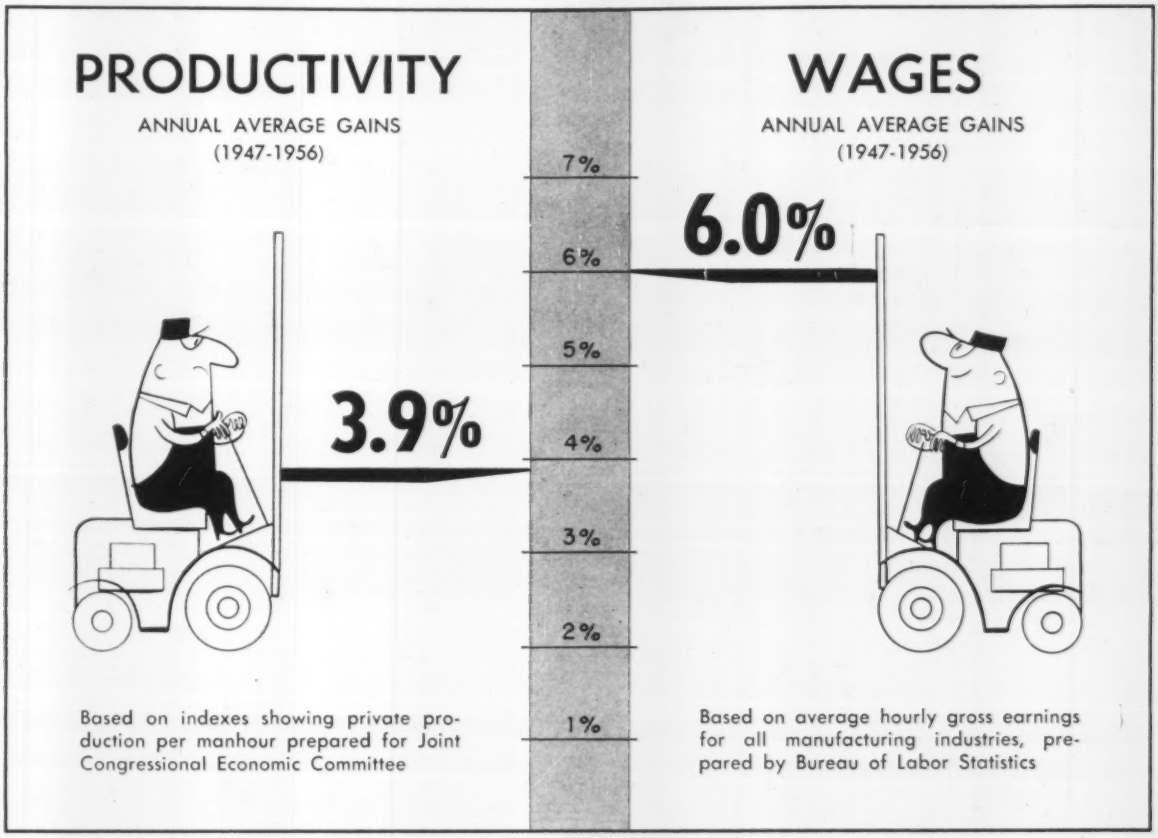
INDUSTRIAL PLASTICS—PVC pipe, fittings, sheets and rods, rigid Kralastic and flexible polyethylene pipe.



MACHINERY & TOOLS—The broadest line of metal-working equipment available from a single source.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



PRICES RISE WHEN

Wages Outrun Productivity

A SMALL BOY put a price of $10,000 on his mongrel dog and finally managed to sell him.

"Get your price?" he was asked.

"Yep!" he replied, "but I had to take two $5000 cats for him."

The youngster was lucky in his experience with inflation. Because metalworking costs have been outpacing prices for some 17 years, industry has done well to get two $4500 cats for its $10,000 dog. U. S. Steel Corp.'s plight is typical. Its total 1956 costs stood 284 per cent higher than they were in 1940, but finished steel prices in 1956 were only 138 per cent higher than 1940's.

What troubles U. S. Steel and many others is that more public hue and cry has arisen over the 138 per cent price rise than the 284 per cent cost increase.

Despite the furor, some industrial economists, such as Robert C. Tyson, chairman of U. S. Steel's finance committee, make a strong case for even greater price hikes to keep pace with cost gains. They are posing today's $64 billion question (the estimated sum lost by industry in inflationary erosion since the 1930s):

Why do prices (and costs) rise? Particularly, why have they moved up in the last two years—in a time of few material shortages and conservative federal monetary management?

Productivity

Economists detect a new species of dollar depreciation: Wage inflation.

The symptoms are described by Ewan Clague, commissioner of statistics for the Department of Labor. He points out that we had a low gain in productivity last year, but a significant rise in labor costs and an accompanying rise in prices.

While productivity has tiptoed forward about 3.9 per cent annually from 1947 to date, wages have leaped 6 per cent each year. The result? Hear U. S. Steel's Robert Tyson: "As long as nationwide

wage inflation continues at rates exceeding the increase in productivity, a price inflation will be compelled."

He's not alone in giving voice to those views.

Says M. R. Gainsbrugh, the National Industrial Conference Board's chief economist: "The current inflation has gone on in the face of a tight monetary policy. It was not touched off by speculative fever or by a stock market or land or commodity boom, as in the past. It was accompanied by a shrinkage rather than an expansion of profit margins. Consumer stocks were high rather than depleted by wartime scarcity or rationing. Our defense outlays were no greater than they were in the years of price stability immediately preceding (1956-57). Finally, several pivotal wage increases came before, rather than after, price increases. In past inflations, prices moved upward first and wage rates lagged."

Adds G. P. Hitchings, manager of Ford Motor Co.'s Economic Analysis Dept.: "Payroll costs for manufacturing have increased 10 per cent since mid-1955. An increase of this magnitude could not be absorbed through an increase in productivity."

Wages

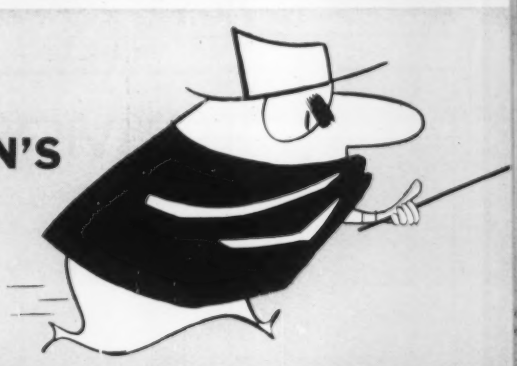
Why are wage gains surpassing productivity improvements? Many reasons account for the phenomenon, but two stand out: 1. The power of organized labor. 2. The temporary plateau we have reached in mechanization.

We have largely progressed through the manual into the mechanization area and are testing the water in automation's realm. We have reached a point where we are hesitating before making the next big jump—to automation—which will develop great cost-cutting possibilities.

Union power stems from numerical and economic strength, politics, and labor shortages.

Economic Strength—While membership has remained steady at about 17.9 million for the last two years, union economic power has been at a peak. The merger of the AFL and CIO in 1955 and the increasing use of pattern bargaining

INFLATION'S VILLAINS



1. DEPRECIATION

Because of a new depreciation policy implemented by the U. S. in 1934, for 23 years industry has been forced to depreciate most of its plant and equipment over unrealistically long periods—and on the basis of original, not replacement, cost. As a result, industry must overstate its profits—currently to the tune of nearly $5 billion a year. It pays taxes and dividends on that paper profit—an erosion of capital that now totals an estimated $64 billion, money which could have been used for modernization of plant and equipment to lower costs and prices.

2. POLITICS

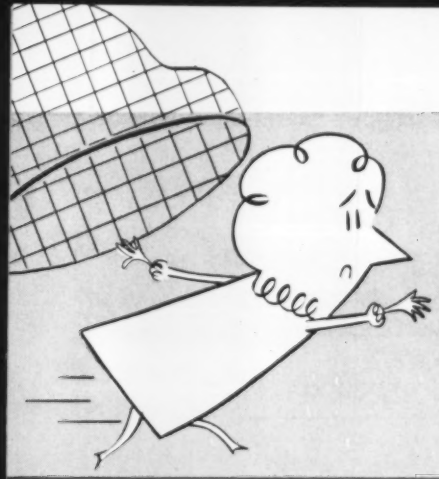
A White House-union alliance, dating from the early 1930s had as one of its most far-reaching effects the passage of the Wagner Act in 1935. That pro-labor law gagged management for 12 years, made it more powerless than usual in combating federal pressure for higher wages that reached a peak shortly after World War II, in late 1945 and 1946. Statements like this on Nov. 5, 1945, from such key officials as Henry A. Wallace sowed a whirlwind of inflation that we're still forced to reap more than a decade later: "Basic wage rates can be raised substantially . . . without generally increased prices and without impairment of the profit position."

3. LABOR

Organized labor seized the Wallace statement gleefully (and dozens like it). While President Truman was calling for an end to strikes and economic instability in 1945-46 (but appointing pro-labor fact finding panels), labor was demanding 25 to 30 per cent wage boosts. It tried to justify its claims by economic arguments like this, prepared by CIO Economist Robert R. Nathan: "Corporate business can support a 25 per cent increase in wages . . . without further increase in productivity, without further expansions in volume, and without reducing return after taxes on net worth to a rate below that of 1936-39."

4. MANAGEMENT

Management was responsible for sowing the 1945-46 whirlwind, too. It fought, but unsuccessfully, for stability. In the 1930s, management lost the leadership of the workingman to the unions. With relatively few brilliant and heartening exceptions, management has yet to regain its leadership role. For a quarter century, management has been on the defensive about wages. Its retreat has lost it many rights to manage. Its retreat has contributed to inflation. In 1958-59, management has a chance to regain leadership by bargaining forcefully and skillfully, especially in the auto and steel industries.



INFLATION'S VICTIMS

1. Higher Prices

NONFARM WHOLESALE PRICE INDEX 1947-49=100	
1957*	125.3
1956	122.2
1955	117.0
1954	114.5
1953	114.0
1952	113.2
1951	115.9
1950	105.0
1949	101.3
1948	103.4
1947	95.3

*7 months

Source: Bureau of Labor Statistics

2. Shrinking Dollar

DOLLAR PURCHASING POWER (measured by wholesale prices) 1947-49=100	
1957*	85.7
1956	87.5
1955	90.3
1954	90.7
1953	90.8
1952	89.6
1951	87.1
1950	97.0
1949	100.8
1948	95.8
1947	103.7

*7 months

Source: Office of Business Economics

3. Smaller Profits

PERCENTAGE RETURN ON NET WORTH OF MANUFACTURING FIRMS	
1956	13.9
1955	14.9
1954	12.4
1953	12.7
1952	12.3
1951	14.4
1950	17.1
1949	13.8
1948	18.9
1947	17.0

Source: First National City Bank of New York

4. Productivity

Output per manhour itself becomes one of inflation's victims when industry's profits drain away and its equipment modernization suffers as a result. Capital spending is beginning to level out and may even drop in 1958 and 1959. One reason: It costs more to re-equip. Many factors contribute to improved productivity—good communications, fine working conditions, strong leadership—but the most important one of all is the degree of mechanization.

have contributed to labor's power at the bargaining table.

The long term contract has brought more installment wage increases that have tended to put pay rates even more out of kilter with productivity levels.

Wage settlements negotiated in the first six months by AFL-CIO average 1 to 3 cents higher than comparable agreements last year.

Politics—When the Wagner Act became law in 1935, organized labor had 3.7 million members. By the time Taft-Hartley was passed in 1947, membership had climbed to 15.4 million. Numerical gains have come since then, but the ratio of membership to the total work force has remained remarkably steady for the last decade.

From 1935 to 1947, particularly, labor had a friend in court. The power of the White House influence shows up in the figures on union membership and in wage gains from 1942 to 1947. The whirlwind started then is still blowing today.

Labor Shortage — During and shortly after World War II, unions used the labor scarcity to win wage gains that exceeded productivity improvements. The skilled labor shortage continues and contributes to high pay scales because of the law of supply and demand.

What's more, the shortage of skilled workers is likely to be with us for years to come: 1. Because of our demands for a steadily rising standard of living. 2. Because of the changing age distribution of our population toward greater percentages in the "young" and "old" groups.

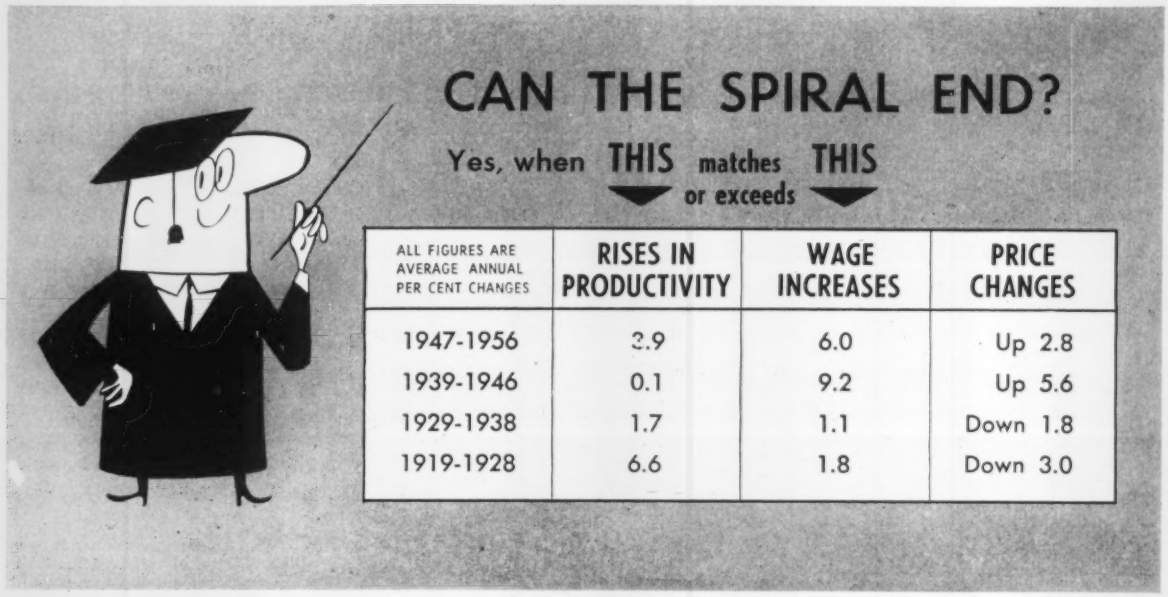
Other Causes

The lag in productivity is not the only reason why prices balloon, although it's the major explanation.

Compounding the difficulties are a host of other reasons. Three are noteworthy:

1. Depreciation and damntaxes. When you lose or waste money, you contribute to eventual price hikes because you have lost an opportunity for constructive work. The dollar wasted must be paid for somehow. It is—in the form of higher prices.

A faulty government depreciа-



ALL FIGURES ARE AVERAGE ANNUAL PER CENT CHANGES	RISES IN PRODUCTIVITY	WAGE INCREASES	PRICE CHANGES
1947-1956	3.9	6.0	Up 2.8
1939-1946	0.1	9.2	Up 5.6
1929-1938	1.7	1.1	Down 1.8
1919-1928	6.6	1.8	Down 3.0

Sources: Bureau of Labor Statistics, Joint Congressional Economic Committee and STEEL

tion policy which began in 1934 has led to a tragic waste in dollars. Depreciation rules which force industry to write off facilities on the basis of the original instead of the much higher replacement cost cause industry to overstate profits: It understates part of its business expense, depreciation. When facilities for doing business wear out or become obsolete, the cost is as legitimate as that of raw materials or labor.

What's more, skyrocketing taxes spur inflation. The cost of operating the government is $408 per year per person, compared with $25 per person at the peak of boom 1929.

2. Easy money and federal budget deficits under Presidents Roosevelt and Truman sent the inflationary balloon still higher. Five years of tight money under President Eisenhower have failed to bring it down.

3. Inflation has become a habit. Most people, including those in labor, government, and management, like inflation, but only for a while. Higher wages seem to mean progress to the worker. The government debt seems easier to manage. Sales figures seem to grow for management. It's intoxicating, but then comes the hangover from which we're suffering now.

Can the Spiral End?

Yes.

Henry Ford blazed the trail years ago when he startled the industrial world by paying his men the unprecedented sum of $5 a day. He was branded a madman, but he knew what he was doing.

His mass production techniques had boosted productivity to such an extent that the premium pay was justified. He—and his employees—reaped great benefits from a great surge forward in mechanization. Productivity figures indicate that the average annual productivity gains in the 1920s were 6.6 per cent, the highest in modern industrial history.

We need another giant stride forward in mechanization.

Many signs point to automation as the next step in our industrial evolution. A survey by the American Society of Tool Engineers suggests that 16 per cent of all metalworking operations could be automated profitably right now.

We don't even need sensational productivity gains like the 6.6 per cent annual rises in the 1920s. If we had achieved 6 per cent annual improvements in productivity during the past decade, we would have matched the wage rate gain and prices would have stabilized.

In the Meantime

But we achieved only 3.9 per cent annual rises in productivity. At the moment, we aren't likely to perform much better, while wages probably will continue to climb. What do we do until automation comes into its own? The answer: Raise prices. Says U. S. Steel's Robert Tyson:

"In this framework of institutionalized inflation, industry must seek to secure at least cost-covering price increases from customers —or face possible insolvency."

He believes that price controls would lead to "squeezing out of profits which would bring about great unemployment. It brings to mind the 1930s, when the American economy last had to operate without profits."

Today, you have three choices:

1. Raise your prices to retain reasonable profits.

2. Hold your prices; resign yourself to profit erosion.

3. Hold your prices but keep your profits reasonable by mechanizing or otherwise boosting your employees' productivity to cover higher wage and other costs.

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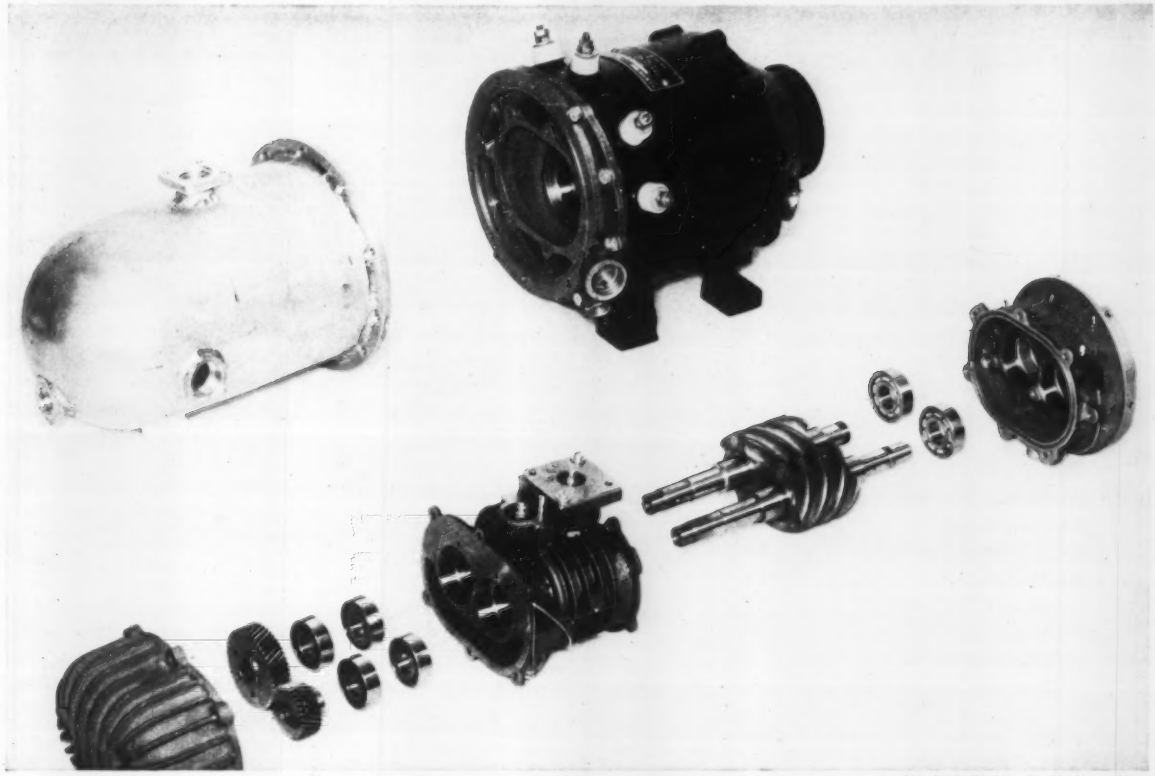

Fairchild Engine & Airplane Corp.

Price Outlook for Parts

Most component makers have adjusted for last summer's labor and material hikes. Result: Next six months will see some increases, but prices will be fairly stable

METALWORKING component prices will continue their upward spiral during the next six months. But revisions will be spotty. Many industries report prices will stabilize during the period.

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Look for most of the increases to come from firms which have been standing pat for several months. Some have tried to absorb higher expenses but now find they're caught in a cost-price squeeze and must make adjustments to halt shrinking profits Others have labor contracts coming due which will probably bring pay boosts that can't be absorbed.

Here's what you can expect from 15 component industries over the next six months:

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Gray Iron Castings—Most foundries recently raised prices 5 to 6 per cent. Some producers see another increase (2 to 7 per cent) in the next six months.

Stabilization seems to be the best bet. Competition is fierce, and business is off from last year's. Foundries are on a four-day cycle in some areas. A few are working only three days. Some report business is off 14 to 18 per cent.

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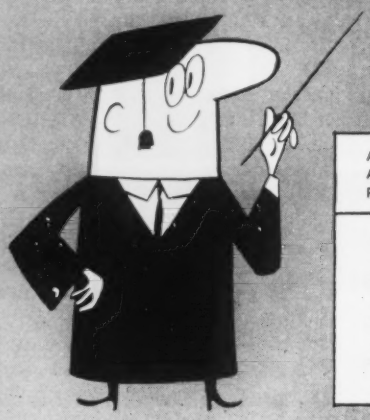

CAN THE SPIRAL END?

Yes, when THIS matches or exceeds THIS

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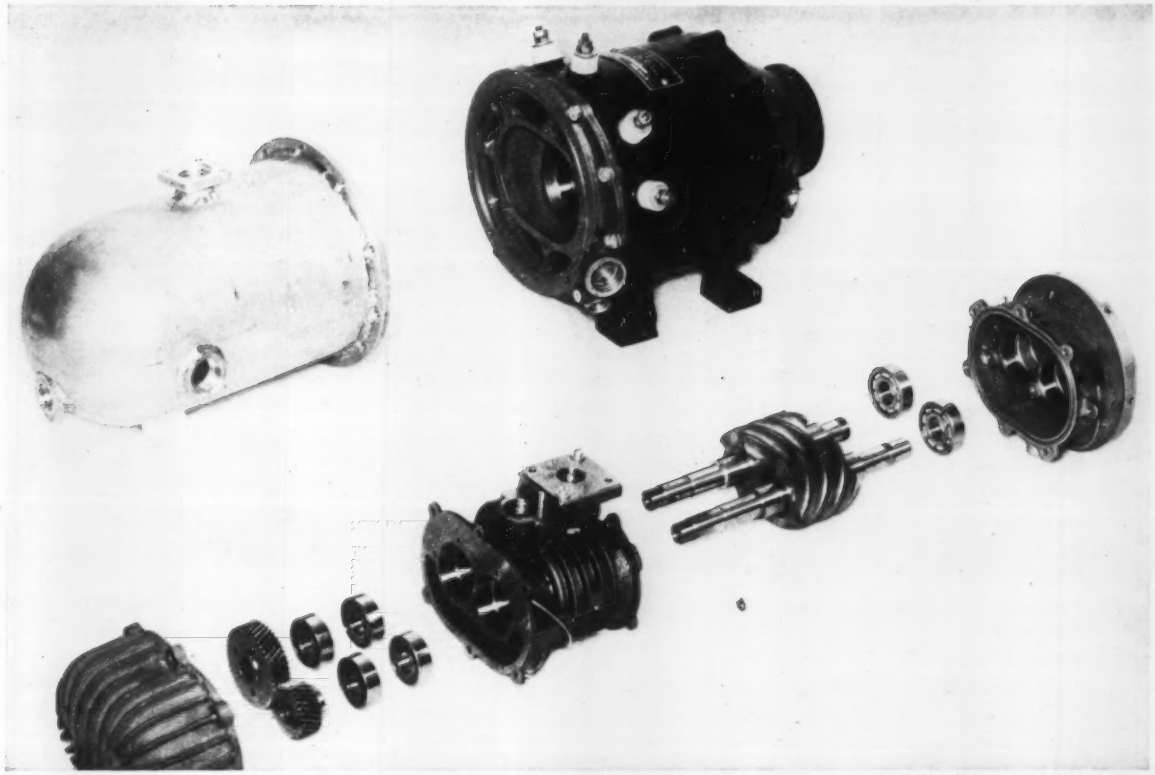

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PAs See Price Hikes Continuing

(Estimates of 200 purchasing agents surveyed by STEEL)

	RISE		FALL		STABILIZATION
	Percentage of respondents	Estimated average increase	Percentage of respondents	Estimated average decrease	Percentage of respondents
Diecastings	32	6%	4	2%	64
Gray iron castings	46	6%	3	5%	51
Malleable castings	45	6%	—	—	55
Nonferrous castings	24	5%	12	5%	64
Steel castings	51	6%	3	5%	46
Forgings	51	6%	3	2%	46
Stampings	49	5%	—	—	51
Springs, wire shapes	50	6%	—	—	50
Antifriction bearings	47	6%	—	—	53
Hose couplings	37	6%	—	—	63
Air & hydraulic cylinders	50	6%	—	—	50
Gears	53	6%	—	—	47
Screw machine products	49	6%	5	5%	46
Fasteners	43	5%	2	2%	55
Electrical equipment (Solenoids, relays, switches, resistors)	37	5%	—	—	63
Electric motors (fractional)	28	5%	—	—	72
Electric motors (1-5 hp)	40	5%	—	—	60
Electric motors (over 5 hp)	38	5%	—	—	62
Mechanical rubber goods	34	5%	—	—	66
Belting, belt drives	36	5%	—	—	64

increases, which account for 50 per cent of gray iron foundries' costs. There's no industry-wide contract. Even with business down, producers say they'll have to pass on any increase.

Malleable Castings — Producers have been moving up prices an average of 6 to 7 per cent since July 1. Most companies have already compensated for recent steel and wage advances but look for more scattered increases as labor contracts fall due.

Foundries say they can't absorb any more costs—that all future increases must be passed on. Prices will stabilize when wages do, they say.

Steel Castings — The industry raised its prices 6 to 7 per cent recently to compensate for higher labor and material costs. Competition and customer resistance are keen, but the industry says the markup was necessary to boost sagging profits.

Producers don't look for additional hikes in the next six months but say upward revisions will probably be made next summer if steel and labor costs go up.

Forgings—Most makers boosted prices 5 to 6 per cent in July and August to adjust for higher steel and labor costs. Prices should stabilize in the next six months because of the fierce competition, customer resistance, and the slack-off in business.

If manufacturers get hit with added costs, another round of price adjustments may be triggered off. Reason: They have been absorbing part of their increases right along and feel they've gone as far as they can.

Stampings — Prices probably won't fluctuate much in the next six months. Most producers say they are no higher than they were last year—that they've had to absorb labor and material increases because of heavy competition and some price cutting.

Business is down, which also tends to put the lid on prices. It's unlikely that the industry can stand many more costs. One Detroit firm reports it upped prices 5 per cent in July and will probably put through another 4 per cent increase within the next six months.

Most producers probably will wait until next summer before taking any action.

Springs—Most companies jacked up their prices 6 to 7 per cent soon after the steel and labor hikes in July. Prices for the industry in general will stabilize over the next

six months, but a few companies with wage contracts coming due in January may put boosts into effect then.

Other deterrents: 1. Heavy competition. 2. Mounting customer resistance to increases. 3. Some firms report business is a little better than it was last year, but industry shipments are down. Tonnage is off 10 per cent, dollar volume 8 per cent.

Outlook: Look for another round of price hikes next summer when the industry again feels the weight of steel and labor increases.

Antifriction Bearings — Some companies have raised prices 5 to 7 per cent in the last few weeks. Most of the others will adjust prices upward before yearend.

Examples: SKF Industries, Philadelphia, boosted prices 5 to 7 per cent on Sept. 1 because of higher material and labor costs. Timken Roller Bearing Co., Canton, Ohio, will add an average of 6 per cent to its prices on Oct. 1, citing these reasons: A 6.5 per cent increase in labor costs, a 4 to 10 per cent hike in material costs.

Before the current wave of adjustments, most producers had not raised prices since last fall. A few boosts came in the spring. It's felt that as soon as this year's labor and material increases are passed along, prices will remain relatively stable until next fall when another wave of revisions is likely.

Hose Couplings—Look for prices to stabilize in the next half year. Reasons: 1. Heavy competition. 2. Lower copper prices (primary is now 27 cents a pound; a year ago it was 40 cents).

Partially offsetting the lower price of copper is the higher cost of other materials and labor. But producers hesitate to raise prices because of anticipated customer resistance and because they're afraid of losing business to companies which stand pat. (The industry hasn't seen a price increase in over a year.)

Gears — Relatively short runs and special orders make it difficult for gearmakers to absorb increased material and labor costs. Since the first of the year, price advances have gone as high as 8 per cent. The industry average is around 2 to 3 per cent.

Opinion is divided on whether prices will advance in the next six months. Some manufacturers indicate they will hold the line; others look for an increase of about 5 per cent.

One factor: Business is good, though it has slacked off some since the first of the year. It's estimated that sales will run 7 to 10 per cent under 1956's, the industry's best year.

Outlook: Watch for mild increases through the first quarter of 1958, followed by more upward adjustments early in the summer in anticipation of higher steel and labor charges.

Screw Machine Products — No clear cut pattern is apparent. Most manufacturers believe prices should be raised, but they doubt if they will be because of competition and possible customer revolt. Others say they will have to move up quotations to stay in business: One eastern company reports its prices will be shoved up 6 per cent this year to adjust for higher labor costs.

A Detroit firm complains that auto companies have allowed it to pass along higher material costs but not labor increases.

Fasteners—Prices of most companies went up 5 to 6 per cent in July because of higher steel and labor rates. They should stabilize over the next six months, but look for another round of hikes next summer when new steel and labor adjustments are made—especially if sales maintain their present pace (6 to 10 per cent better than last year's).

Relays—Higher labor rates and the increased cost of silicon steel suggest the possibility of a price upswing. Lower copper prices and heavy competition are counterinfluences.

Manufacturers have not boosted quotations since 1955 when they tacked 9 to 10 per cent on prices. Increases absorbed since then have trimmed profit margins.

If business continues to hold at better than last year's level, look for a price bump of around 5 per cent.

Electric Motors—Sporadic hikes this year have advanced prices 2 to 7 per cent, depending on the unit and its size.

The last round of increases is still meeting some customer resistance, but most makers feel another 2 to 4 per cent will be needed to take care of increased material and labor charges. Best bet for price advances: Special units. They haven't kept pace costwise with the basic lines over the last few years.

Several factors will tend to hold down prices: 1. Business isn't as good as it was last year. It's off as much as 10 to 20 per cent in certain lines. 2. The price of copper has dropped, partially offsetting higher steel costs. 3. Competition is keen. A manufacturer will lose business if his prices are out of line with his competitors'.

Mechanical Rubber Goods—The industry raised its prices 3 to 4 per cent in August. Even though manufacturers are caught in a squeeze, don't look for prices to advance in the next six months. Major reason: The industry has the capacity to produce far more goods than it can sell, making the competitive situation intense.

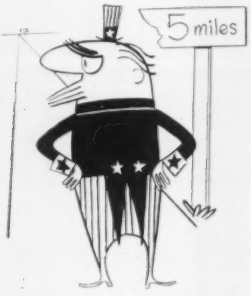
The fact that business may be headed for an all-time record year won't stimulate a price upswing. "Someone's always willing to sell at a lower price," says an observer. "In fact, many manufacturers are selling certain products at below list price."

Recap—The next six months will see sporadic price advances in metalworking components, but the trend will be toward stabilization. Major reasons: 1. Many industries have just gone through price adjustments. 2. Competition is heavy as business slacks off a little in some industries. 3. Customer resistance to further revisions is growing.

But there's still no end in sight to the upward cycle. Another round of hikes is due next summer.

This is the first of four articles on prices that affect metalworking. Equipment prices will be dealt with Oct. 7, construction prices Oct. 14, and consumer hard goods prices Oct. 21.

An extra copy of this or succeeding articles is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



Highway Program: Progress Is Lacking

FOURTEEN months after passage of the Federal Aid Highway Act, the Bureau of Public Roads reports that only 5.8 miles have been completed (as of Aug. 31).

The outlook through 1958: Completion of about 500 miles. A BPR spokesman estimates some 2100 project miles will be completed, but you must divide that figure by four. Project mileage, as reported by BPR, includes all contracts for the construction process (grading, paving, bridges, and landscaping).

Dirt Will Really Fly by 1959

So don't expect highway construction in the U. S. to be much better next year than it is this one. At best, look for a 5 to 10 per cent increase. In 1958, toll road construction will fade to practically nothing. The decline began this year. Construction sponsored by the federal program will do little more than fill that gap.

The federal program, long touted as the focal point for the nation's expected boom of the 1960s, should get going by 1959, says BPR.

Figuring that the states had about 300 miles of Highway Act roads in the programing stages on Aug. 31, you can expect the rate of construction in 1959 to be at least 100 per cent above 1958's. The estimate will ring true if states continue to increase their programing rates as they have in the last few months. But, remember, the 1000 miles of construction scheduled for 1959 must be almost through the programing stages by the end of 1957.

Statistical note: When checking on how the federal program affects your business, don't be misled by BPR reports that 6000 miles of the 40,000-mile program are finished. Some 2000 miles are completed toll roads recently included in the program by Congress; some 4000 miles are freeways in the interstate system which have been built.

Think in terms of 34,000 miles of highways. Only 5.8 miles are completed. An additional 1000 miles has been authorized by Congress, but no funds have been apportioned for them. Congress will probably add another 700 miles next session.

Key To Bridge Building Progress

One way to understand the program: Over 3000 bridges are planned for the 850 miles already in the works. Today, 39 are finished; about 1650 are underway or have been contracted for; about 325 additional contracts have been advertised but not awarded; another 1000 have to wait for preliminary engineering and right-of-way acquisition to be completed before contracts will be advertised.

Dollarwise, the program looks like this: An additional $2.5 billion has been authorized for the states by the government but is not programed. Of the $2.7 billion programed by the states since the Highway Act passed, $2.3 billion has come from the federal government. Work to be completed in 1958 will cost the government about $1 billion. Total value of 1958 Highway Act construction: About $1.1 billion.

How Fast Will It Get to You

Here's a timetable for analyzing the program's value to your business. From initial programing by the states to contract advertising: 17 months. From advertising to awards: Two months. From award to start of construction: Two months.

Notes American Road Builders' Association: A program begun in the summer of 1957 will not require a contractor to buy new equipment, material, and supplies for the job until the spring of 1959.

An ARBA spokesman goes along with STEEL's estimate of 500 miles of finished interstate highways in 1958 and thinks 1000 miles in 1959 may be a little conservative. Looking at the 15-year program, he thinks it possible that 3000 miles might get into the finished column in 1960; then construction will level off somewhere between 2000 and 3000 miles over the next five years.

Missile Chief Cites Choice Problems

William Holaday, Charles Wilson's special assistant for guided missiles, warns: "We may well be faced in the foreseeable future with some indigestion in the national defense from too many air defense systems. We could easily have more than we need. . . our problem is to reorient or eliminate such systems. . ."

Mr. Holaday's comments on the need for missiles in quantity confirm growing suspicions here that the Pentagon is not too far from a decision to produce some of the larger missiles in quantity, a switch from strictly developmental efforts at present.

The Ultimate in Missile Design

The decision to make production decisions seems to come for one simple reason, hints Mr. Holaday: "We may be approaching the limit of missile design." For the fuels available, we've gone about as far as we can in airframe experimentation and development. So we may produce missiles under present fuel limitations, while more experimental work goes into new high energy fuels. The assumption: We can't afford to wait for new breakthroughs in fuels because the competition from the Russians is getting keener.

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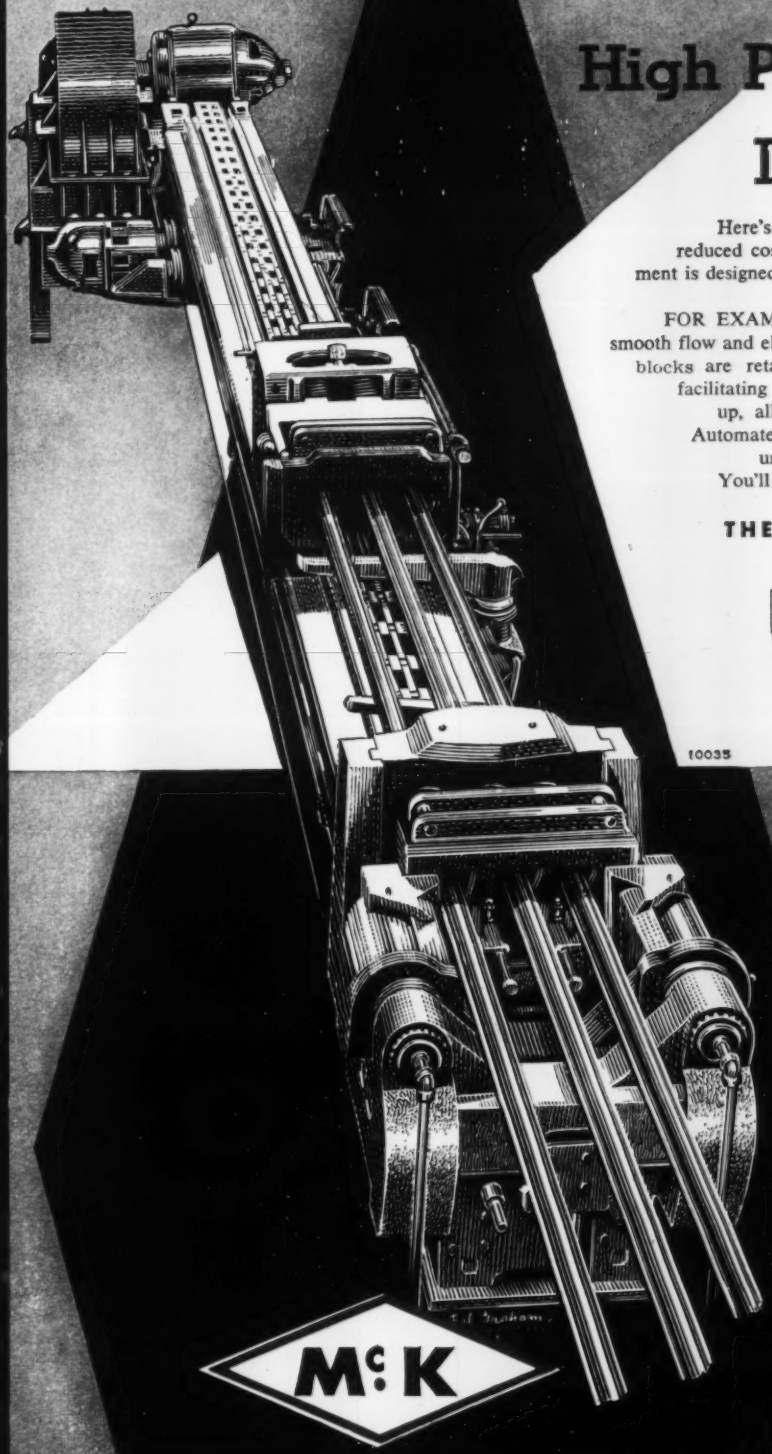

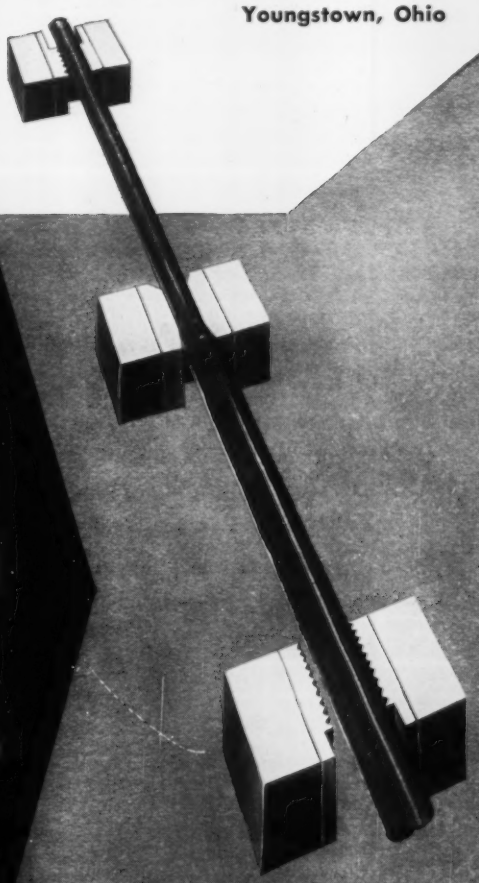

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China's Economy Balks Reds

Communists drop plans for modern industrialization, saying country can't afford it. They'll build 18 small iron and steel plants in 17 provinces by 1962

COMMUNIST China has abandoned its plans for modern industrialization, reveals the *People's Daily*, published in Peiping.

As a substitute, the newspaper explains, the Reds will exploit China's traditionally plentiful supply of cheap labor in a drive to add 1.6 million tons to steel production and 2.4 million tons to cast iron production by 1962.

Steel production this year is estimated at slightly more than 5 million tons.

Unsound—Red leaders say large, highly mechanized facilities require more resources than the economy can stand. They also require a minimum of manpower, and China has a surplus.

The decision has been made to build 18 small iron and steel producing plants in 17 provinces. Capacities will range from 50,000 to 300,000 tons.

No time was specified, but the article states that some may be in production by 1960.

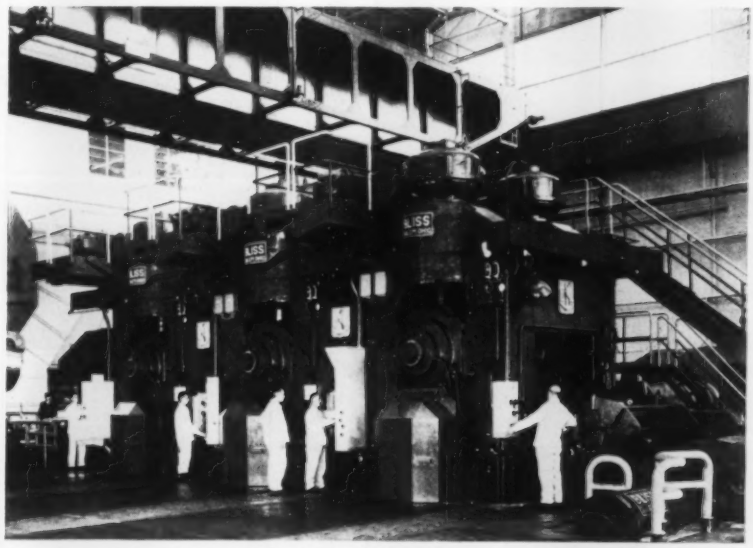
Reversal — Small, regionalized plants and handicraft shops are being emphasized throughout China's industry. Observers see this as a return to China's historical methods and abandonment of the Communists' ambitious plans to create a modern industrialized economy.

Indonesia Seeks Industry

The Indonesian government predicts it will start to develop an iron and steel industry in 1958. Behind the claim is a $100-million credit offer from the USSR which is now being studied by Indonesia's parliament.

West Germany and Japan are also singled out as possible sources of money. An economic and technical co-operation agreement was worked out recently after West German experts toured Indonesia. A substantial reparations settlement is eventually expected from Japan.

Borneo, South Sumatra, and West Java have iron ore, but much of it has a high nickel and chromium content. Both are expensive to remove.



Bliss Makes First Large Rolling Mill for Benelux

This 3 stand, 4 high cold rolling mill recently went into production at Liege, Belgium. It was built by the E. W. Bliss Co., Canton, Ohio, for Societe Anonyme Metallurgique d'Esperance Longdoz. It will produce 400,000 tons per year.

Poland Gets Paper Mill

Black-Clawson Co., New York, will manufacture three paper machines and auxiliary equipment for a modern paper mill to be installed in Poland. The machinery will be produced in the firm's plant at Newport, England, at a cost in excess of $6 million which will be paid in sterling.

The mill will produce about 250 tons of kraft, bag, and machine glazed wrapping paper a day.

One machine is expected to be in operation by the fall of 1959, and the second by March, 1960.

UC Builds Mexican Plant

Electrodos Nacionales S.A., an affiliate of Union Carbide Corp., is building a graphite electrode plant near Monterrey, Mex. Production is scheduled to begin sometime next year.

Graphite products manufactured will be used in Mexico's nuclear power development, electric furnace steel, ferroalloy, and electrochemical industries.

The plant, situated on 200 acres, will produce its own electricity and will use local natural gas for fuel. Water will be supplied by company owned wells on the site and the city of Monterrey.

Morse G. Dial, president of Union Carbide, announced that officials of the Mexican state of Nuevo Leon notified the company last week that arrangements for water, gas, and power were completed. He also said that procurement of equipment and preparation of the site were underway.

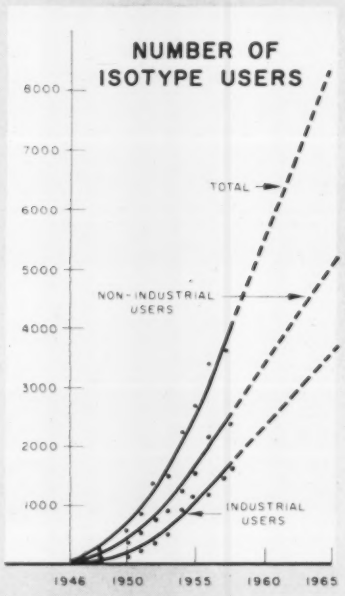
The Electrodos Nacionales plant will be "the most modern and efficient yet designed for the manufacture of graphite electrodes," according to Mr. Dial. Under a technical assistance agreement, the Mexican firm will have access to Union Carbide's research.

$400,000,000 Saved Annually* By Isotope Users

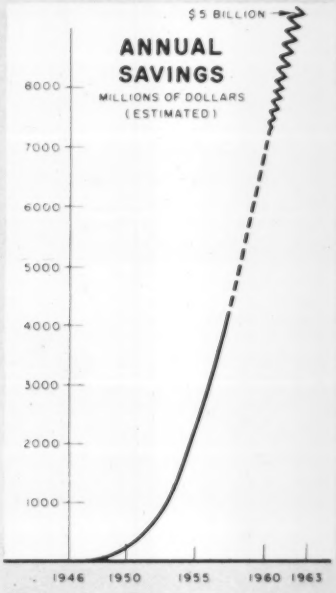
	(Millions of dollars)
Metal thickness gages	$23.1
Radiographic testing	46.6
Tool wear studies	1.0
Piston ring etc. studies	15.0
Corrosion studies	3.8
Oil industry uses	178.3
Rubber industry uses	14.1
Plastic and adhesive uses	4.0
Paper and allied uses	24.0
Cigarette density gages	50.0
Other industrial uses	46.3
Total	$406.2

Source: Dr. W. F. Libby, commissioner, Atomic Energy Commission.
*Estimated from survey.

As Uses Increase . . .



Savings Multiply . . .



Isotopes: Big Money Saver

Radiation, the "laboratory miracle," is fast becoming an important industrial work horse. Savings in '57: About $400 million. In 1962: About $5 billion

BY 1962, radioisotopes will save U. S. industry $5 billion annually, contends Dr. W. F. Libby, commissioner, Atomic Energy Commission. The yearly rate is $400 million now. Dr. Libby thinks the astronomical gain is possible because the rate of application is determined by speed of learning new uses, not by technical barriers.

He bases his predictions on these factors: 1. Known applications have by no means saturated their potential market. 2. Many new uses, such as process control, are just emerging from the experimental stage.

History—In 1953, the AEC estimated that radioisotopes were saving industry $100 million annually. A review in November, 1956, indicated savings of over $300 million. Estimated savings in July, 1957: $406 million annually.

Direct Savings—Dr. Libby's estimate includes direct plus indirect savings, minus the cost of the device containing the isotope. Example of direct savings: Substitution of a pellet of cobalt-60 for an x-ray machine to detect flaws in castings or welds.

Indirect Savings—This category includes better process control, fewer rejections, use of less costly raw or intermediate materials and less waste. Example: A tiremaker uses radiostrontium-90 gages in place of laboratory analysis to control the exact thickness of rubber coating on tire cords. Results: 1. Reduction in thickness variations. 2. Elimination of waste. One gage saves $75,000 annually.

"A thickness gage generally pays for itself within a year or less," says Dr. Libby. "Maintenance and depreciation costs are quite low; and isotopes are safe and cheap."

Potential Saving—Dr. Libby believes isotopes will repay the costs of the nation's expensive atomic power programs.

By Aug. 1, 1957, the AEC had licensed 4182 organizations to use radioisotopes. Forty-one per cent (1667) of these were industrial firms.

Companies stay sold on isotopes once they start working with them. Less than 2 per cent drop out of the program. And most of them have consulting laboratories do their work, explains Dr. Libby.

Another Benefit — Growing demand is responsible for the birth of a new industry. Private processing plants obtain large quantities of the material and resell it in small lots.

Of the 500 largest manufactur-

ing firms in the nation, 250 now use radioisotopes. Dr. Libby expects the other half to follow suit soon. "But, more important," he says, "savings per user will likely increase faster than the number of users." Firms will multiply their uses. One company already operates more than 100 thickness gages.

Thickness gages saved industry an estimated $40 million in 1953. They'll save about $125 million in 1957. The petroleum industry has compiled the greatest gain (from about $5 million in 1953 to an estimated $178 million in 1957).

Price — Two months ago, the AEC cut prices on radioactive cobalt almost in half. But they far exceed the "rock bottom" quotations which Dr. Libby thinks will be "practical and realistic" in many instances.

For example, it is possible that Cs_{137}, with a half-life of 33 years, could drop to 30 cents per curie from its present price of $10. S_{35}, with a half-life of 87 days, could drop to 0.5 cent per curie from the present $2000, and C_{14}, with a half-life of 5600 years, could drop to $110 per curie from its present $22,000.

Market Outlook—Dr. Libby believes that a great potential lies in placing short-lived isotopes in the product being processed. Radiation will serve its control function, but the finished product will be nonradioactive.

Other potential markets: Radioactive drugs, medicinals, organic chemicals, and myriad industrial uses.

Supply Outlook—Some radioactive substances must be grown rather than synthesized in the laboratory. The AEC has operated an isotope farm at its Argonne National Laboratory near Chicago for over six years. Another was established with the help of the American Tobacco Co. at the Medical College of Virginia, Richmond, Va.

Summary—Dr. Libby predicts: "We have a golden future ahead of us in the industrial and medical uses of isotopes and radiation. Manufacturers and farmers will regularly use them; doctors will carry little radioactive pills and Geiger counters; and we will teach everyone about them in the schools."

GE Brings Out New Lines

New gear motors and speed reducers prompted by current emphasis on mechanization. Gear motor market is expected to grow faster than the motor market

GENERAL ELECTRIC Co. is introducing new gear motor and speed reducer lines this week.

"It's the most important event in our gear motor history since the line was offered to the market in 1930," says H. W. Bennett, manager-marketing, Gear Motor & Transmission Components Dept., Paterson, N. J.

Three products being brought out are: 1. Integral-type gear motors. 2. All-motor gear motors. 3. Helical reducers. All are rated at 1 to 10 hp. A shaft-mounted reducer was introduced last June, and the remaining larger sizes will be ready soon.

Rapid Progress—Since 1930, the market for gear motors has grown to an estimated $70 million to $75 million.

Mr. Bennett points out: Although many manufacturers originally entered the gear motor market to protect their then existing motor or gear business, most gear motor manufacturers today want this business because of its importance alone.

"Another development that accelerated the growth of the gear motor was the change from a specialty type product, built to order and requiring considerable application engineering, to a 'shelf goods' item for all but the most critical process line drives."

Grass Roots—In 1953 GE formed a study group to contact users and get their thinking on gear motors and learn what they wanted.

L. J. Burger, general manager of the Gear Motor & Transmission Components Dept., reports:

"The results of this study indicated that the gear motor market was destined to grow at a more rapid rate than the motor market. This was caused by the mechanization trend and the strong urge to automation. The study indicated that the gear motor was not a part of the motor family as far as fitting the structure of policy and distribution, but rather, a part of the motorized transmission family."

Features—GE says its new lines will attract distributors, resellers, and users because:

1. Inventories of maintenance parts can be reduced.
2. Downtime for repairs can be cut 50 per cent.
3. Motors and internal gear sets can be changed quicker to get different output speeds.

To Spend $20 Million

Crucible Steel Co. of America, Pittsburgh, has initiated a $20-million program for mill improvements at its Midland (Pa.) Works. It will offer 101,153 shares of cumulative convertible preferred stock to finance the program.

It includes installation of a new electrically driven blooming and slabbing mill, modifications to the hot strip mill, improvements in slab heating, and addition of auxiliary equipment.

Joel Hunter, Crucible's president, stated that the additional hot strip mill capacity was essential to Crucible's plan for greater production of silicon and stainless sheets and strip. The projects will take about two years.

Fruehauf Forms Aluminum

Fruehauf Trailer Co. will operate a new $3-million aluminum extrusion plant in Decatur, Ala. Construction will begin in early November.

The plant, financed by the city of Decatur, will be leased by Fruehauf to produce cross members, floors, tank extrusions, roof rails, and door components for truck-trailers. Production will begin in July, 1958.

Equipment will include 35,000-lb furnaces, 2200-ton extrusion presses, aging ovens, and cranes.

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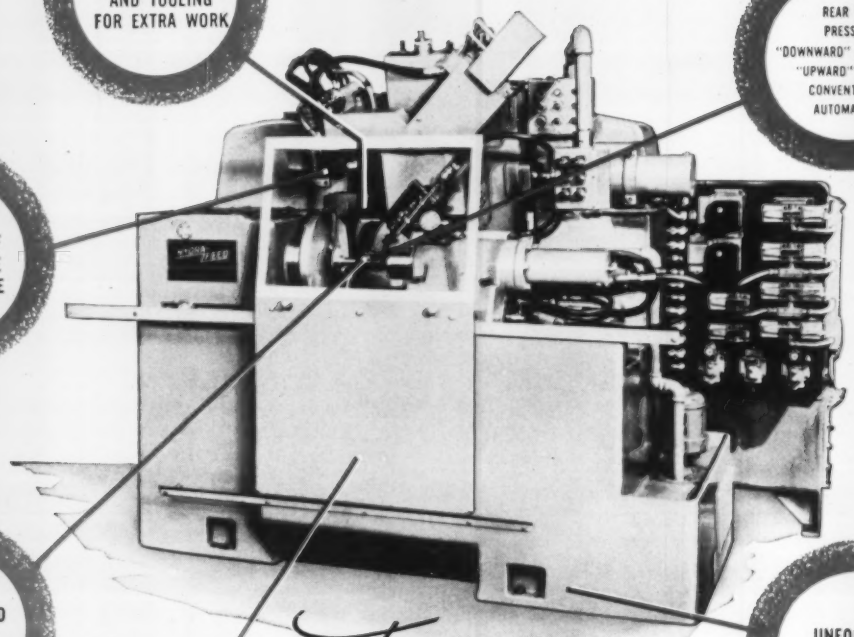

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These men will determine a corporate fate as . . .

AMC Faces Crucial Year

TODAY is the last day in American Motor Corp.'s fiscal year, and President George Romney has grounds for optimism.

- AMC is in its best financial shape since the company was formed in 1954.
- Mr. Romney's paring campaign has cut costs to the bone.
- Next year's Rambler looks made to order for the economy car buying trend.

Of course, Walter Reuther is still a cloud on AMC's horizon—it has 8000 UAW members.

Just how big a factor labor has become to AMC's future is evident in the warning behind Mr. Romney's recent speech to employees at Kenosha, Wis. He made it clear that fiscal 1958 is the make or break year for American Motors as an automobile manufacturer. "We can't lose money in 1958 and stay in the automotive field," Mr. Romney said.

AMC can lose if it's hit by strikes or excessive wage demands when its contract with the auto workers expires next June 15. It's probably one of the reasons Mr. Romney reversed his opposition to industry-wide bargaining.

Other Factors—Here's the rundown on what Mr. Romney has accomplished in his campaign to sell American car buyers on the Rambler philosophy.

Finances

For fiscal 1957, the company's net loss will be $5 million to $6 million, versus $19.7 million in 1956 and $6.9 million in 1955.

Operating losses are about $8 million. They break down to a $3 million deficit for the Kelvinator Div.; another $3 million for the Special Products Div.; and some $2 million for the automotive division.

Net sales this fiscal year will about equal the $408 million AMC collected in 1956.

The company figures it has sold almost 120,000 cars this year, compared with 112,000 last year.

Products

Next week, American Motors will introduce 1958 cars. Motordom has deduced that the whole product line (excluding Metropolitan) will be called Rambler.

For 1958, Nash and Hudson will be considered senior Ramblers and will be produced in hardtop and station wagon models.

Addition—The Rambler V-8 and Six will continue as the backbone of AMC's line. To these Mr. Romney has announced he'll add a junior Rambler which presumably will go into production in November.

AMC's imported Metropolitan is

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assured of another good year. Metropolitan sales for fiscal 1957 came to about 11,000 units, compared with some 5000 cars for the same period of 1956.

Prices

Another angle of the Romney philosophy for 1958 will be to drop prices on senior Ramblers although those on the Rambler V-8 and Six will stay about where they are.

The company plans a 9 to 10 per cent cut on factory prices to help the movement of its larger cars.

Sources close to AMC's top management say they won't be surprised if 25,000 to 30,000 senior cars are sold next year. Output for this fiscal year: About 12,000 units.

Says one AMC informant: "Without air conditioning, a dealer can sell any one of these senior cars for less than $3000 and make a profit."

The Rambler V-8 tentatively will be priced $170 less than the senior cars. Rambler Sixes will sell for $360 below the senior car line (factory price).

Junior — Perhaps the biggest sales pitch will be aimed at AMC's junior-sized Rambler. The car is built on a 100-in. wheelbase, as is GM's German built Opel. But where the Opel is expected to list for around the same price as GM's Vauxhall Victor ($1881, Detroit), the pint-sized Rambler with a straight stick will carry a list price of $1650 to $1700.

The AMC car will offer an automatic transmission for another $100 or so. None of the foreign imports has an automatic shift.

Dealers

During 1957, over 400 dealers have been convinced Mr. Romney means business. The company now has about 2300 dealers. More than 125 of them also handle Big Three model lines. That isn't making Ford, GM, or Chrysler any too happy.

The situation is a good measure of the amount of independence dealers gained from auto companies in the last two years. Before last year no dealer would have dared to take on a competitive line for fear of losing his franchise. Following a preview of its cars in Los Angeles two weeks ago, AMC received 65 applications for dealerships.

Programing

Mr. Romney reportedly says his company can break even next year if it sells only 115,000 units.

That's fewer cars than were sold this year, but the firm's debts have been reduced, so it won't need as much income to pay its bills (see STEEL, Sept. 23, p. 94).

Actually, AMC expects to sell more cars. It's programing for 150,000 units, or about 2.5 per cent of a 6 million car market.

Even with this top estimate, each dealership would have to peddle about 65 cars during the fiscal year, or a little more than five cars per dealer per month. There probably are plenty of AMC dealers who can't sell even that quantity, but active peddlers now signing on should take up the slack.

Fleet Sales

Mr. Romney also has discovered fleet users like Ramblers. Independent surveys by two rental and leasing agencies indicate Ramblers cost between $149 and $454 less to buy, operate, and sell than other low priced models.

W. B. Ramsey, director of AMC's government and fleet sales, says: "The 1956 sales of Ramblers to fleet users were double those of 1955."

Some 1600 fleet sales were made in '55, about 3200 in 1956. It looks like some 6000 fleet cars have been sold in fiscal 1957.

If orders continue to come in at the present rate, one AMC source figures the firm can sell 10,000 Ramblers to fleet owners in 1958.

U.S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,619
May	531,365	471,675
June	500,271	430,373
July	495,629	448,876
August	524,854	402,575
8 Mo. Total	4,393,371	4,044,052
September		190,726
October		389,061
November		581,803
December		597,226
Total		5,802,808

Week Ended	1957	1956
Aug. 24	123,130	69,676
Aug. 31	118,563	58,166
Sept. 7	90,704	47,827
Sept. 14	85,816	63,798
Sept. 21	51,404†	35,652
Sept. 28	47,850*	43,369

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

Manufacturing

In addition to the single body shell and single assembly line, AMC's Kenosha plant has installed a dip tank for undercoating the whole body.

Rambler center grilles are being made from extruded aluminum.

Such fabricating and assembly methods are typical at AMC. They result in sizable material and labor savings on low production runs.

Success?

Here's the way AMC's future stacks up:

- Mr. Romney probably has sold the American public on the idea of a compact car.
- He has developed a product to meet that philosophy.
- The trend in small car sales indicates the market is ripe for his product.

Good Odds—Mr. Romney sees no reason why he can't sell enough cars to put his company in the black next year. He reportedly has predicted that the company will know by Dec. 31 whether it will sell enough cars to pull through.

Louis E. Wolfson, AMC's majority stockholder, won't move unless Mr. Romney fails to produce.

After Jan. 1, Mr. Reuther will be the man for AMC to watch.

The Question—That's the way AMC states its case. As an independent, it is bucking a strong trend that favors the Big Three. In such a struggle, it is the sentimental favorite, but, as Mr. Romney admits, the battle will be won or lost at the marketplace.

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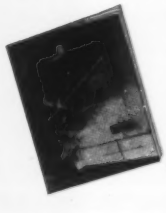

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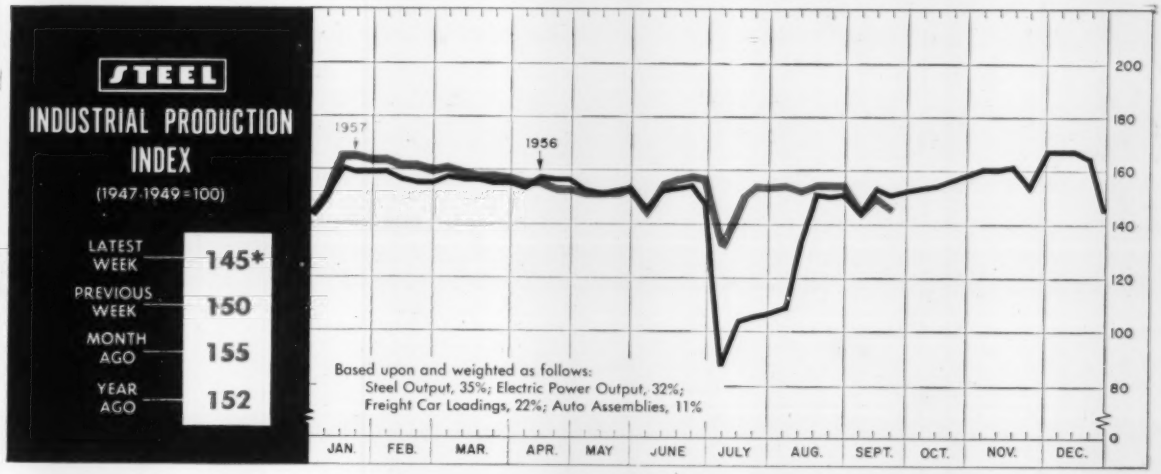


*Week ended Sept. 21.

More 'High Plateau' Coming in 1958

NEXT YEAR could well be a carbon copy of 1957 as far as business prospects are concerned. Many of the factors at work in 1957 will carry over into 1958, causing a continuation of the "high level of activity," "rolling adjustments," and the general business uncertainty inherent in such an economy. No over-all downtrend in 1958 is anticipated—neither is a decided upturn.

Prices Key Element—Prices will continue to rise next year to the tune of about 3 per cent. This is a self-feeding spiral, according to R. S. Stevenson, president of Allis-Chalmers Mfg. Co., Milwaukee. "It starts with wage inflation which turns into cost inflation and ends in price inflation. The resulting price inflation in turn raises the Bureau of Labor Statistics' cost-of-living index and automatically—through operation of contract escalator clauses—triggers another round of wage increases. . . ." In 1958, as in 1957, this inflation will account for some records in dollar volume where physical volume falls short.

Industrial Production — Next year production will hold to about the same level that prevailed this year, although there will be a shake-up in the mix. The Federal Reserve Board's monthly production index (seasonally adjusted) will average about 145 for the year, with relative stability from beginning to end. Most industries can look forward to production uninterrupted by labor disagreements and material shortages. Many industries will try to level out peaks and valleys in production to minimize SUB payments.

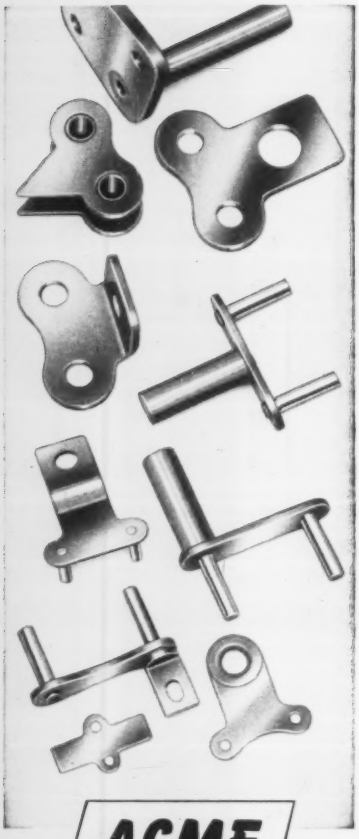
GNP—Increased costs will boost gross national product at least 3 per cent, and there will be some increases in the service industries. In durable and nondurable goods, plusses and minuses will about balance, leaving a final GNP of just under $450 billion.

Durable Goods—Shipments will

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,112[1]	2,101	2,502
Electric Power Distributed (million kw-hr)	11,950[1]	11,947	11,482
Bituminous Coal Output (1000 tons)	10,105[1]	8,480	10,601
Petroleum Production (daily avg—1000 bbl)	6,800[1]	6,821	7,063
Construction Volume (*ENR*—millions)	$328.6	$262.0	$380.7
Auto, Truck Output, U. S., Canada (*Ward's*)	67,153[1]	105,303	52,718
TRADE			
Freight Car Loadings (1000 cars)	740[1]	741	822
Business Failures (Dun & Bradstreet)	237	208	203
Currency in Circulation (millions)[3]	$31,200[1]	$31,145	$30,810
Dept. Store Sales (changes from year ago)[3]	0[1]%	+5%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,881	$20,417	$24,093
Federal Gross Debt (billions)	$273.3	$273.8	$274.5
Bond Volume, NYSE (millions)	$17.0[1]	$12.6	$18.3
Stocks Sales, NYSE (thousands of shares)	9,500[1]	5,479	10,449
Loans and Investments (billions)[4]	$86.6	$86.3	$85.9
U. S. Govt. Obligations Held (billions)[4]	$24.8	$24.8	$26.5
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	225.71
STEEL's Nonferrous Metal Price Index[6]	209.7	209.3	265.0
All Commodities[7]	117.8	118.1	115.1
Commodities Other Than Farm & Foods[7]	125.8	125.8	122.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.



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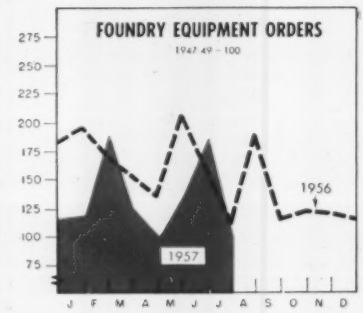
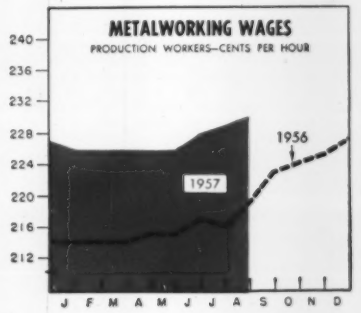
THE BUSINESS TREND





	1957	1956	1955
Jan.	117.9	195.6	81.0
Feb.	188.4	169.0	90.4
Mar.	127.0	152.7	163.6
Apr.	101.1	135.2	178.6
May	136.2	207.0	145.7
June	187.5	156.7	186.8
July	98.6	110.3	213.4
Aug.	....	188.3	134.0
Sept.	....	114.7	156.7
Oct.	....	122.2	108.6
Nov.	....	121.0	154.4
Dec.	....	115.6	183.9
Avg.	....	149.0	150.0

Foundry Equipment Mfrs. Assn.

Charts copyright, 1957, STEEL.

1956	Prim. Mtls.	Fab. Prod.	Mach-inery	Elec. Mchy.	Trans. Equip.
Aug.	236	207	221	199	232
Sept.	241	211	225	201	236
Oct.	242	213	225	203	238
Nov.	244	213	225	204	239
Dec.	245	215	226	205	243
1957					
Jan.	247	213	226	206	237
Feb.	245	213	227	206	238
Mar.	246	214	228	206	238
Apr.	246	214	228	206	238
May	246	215	228	205	237
June	248	217	230	207	240
July*	252	218	230	205	241
Aug.*	253	220	229	206	242

*Preliminary.
U. S. Bureau of Labor Statistics.

hold at a high level, depending on a relatively good rate of incoming orders and a still large backlog. For several months, new orders have held below shipments, and the situation is not expected to change materially for a while. But by midyear shipments and orders should be about in balance. Unfilled orders for durable goods, resting at $56.3 billion on Aug. 1, will continue to decline, but should not go below the equivalent of three months' production.

Capital outlays are peaking out and will probably remain level until well into 1958. Then there will be a gradual decline as the current expansion programs become complete. Dollar value may go as low as $35 billion next year before it starts up in 1959-60.

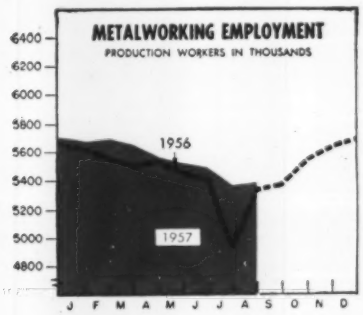
On the basis of the decline in net new orders this year, machine tool shipments will slide off 1957's $900 million pace next year. But heavy tooling in the automotive industry will help keep the industry at a profitable level. Shipments of railroad cars will fall short of the nearly 100,000-unit level expected this year, but shipments during the first half of next year will continue at the present pace because of the large backlog. If rate increases significantly improve the profits of Class I railroads, new car buying will remain at present levels.

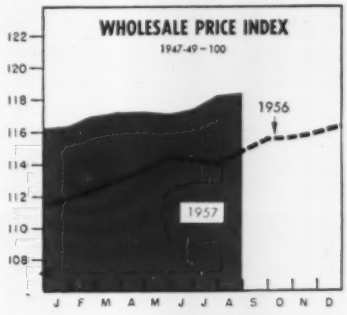
Production of electric equipment will remain at record levels. Electric utility officials used to say their aim was to double capacity every ten years. Now the thinking is heading more toward a seven-year cycle.

With the end of the drought and rising prices of his products, the farmer again is looking to modernization of equipment to improve his position. Next year should be one of the best in recent times for agricultural equipment sales.

Construction—Plant expansions will be well off the 1957 pace next year, on the basis of contract awards this year for future construction. But home building will pass the 1 million unit mark again to help soften the decline. Several strong segments of the industry will remain that way—schools, churches, office buildings—and by midyear, the federal highway program should get off dead center. But the total dollar volume for construction should do little better than match this year's anticipated $46.8 billion.

Autos—While the most common-





1956	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
Aug.	1,091	864	1,257	878	1,235
Sept.	1,126	885	1,262	891	1,205
Oct.	1,132	911	1,264	914	1,319
Nov.	1,132	911	1,273	918	1,402
Dec.	1,133	909	1,289	907	1,439
1957					
Jan.	1,130	906	1,299	892	1,440
Feb.	1,124	903	1,294	877	1,482
Mar.	1,112	898	1,291	869	1,474
Apr.	1,101	889	1,277	853	1,446
May	1,093	883	1,255	847	1,435
June	1,093	887	1,239	855	1,415
July*	1,074	870	1,206	850	1,369
Aug.*	1,070	887	1,192	871	1,363

*Preliminary.
U. S. Bureau of Labor Statistics.

	All Commodities 1957	All Commodities 1956	Other Than Farm & Foods 1957	Other Than Farm & Foods 1956
Jan.	116.9	111.9	125.2	120.4
Feb.	117.0	112.4	125.5	120.6
Mar.	116.9	112.8	125.4	121.0
Apr.	117.2	113.6	125.4	121.6
May	117.1	114.4	125.2	121.7
June	117.4	114.2	125.2	121.5
July	118.2	114.0	125.7	121.4
Aug.	118.3	114.7	125.9	122.5
Sept.	....	115.5	....	123.1
Oct.	....	115.6	....	123.6
Nov.	....	115.9	....	124.2
Dec.	....	116.2	....	124.6

U. S. Bureau of Labor Statistics.

ly heard production figure for 1958 is 6.5 million cars, it could be conservative. Here is the one large industry in which a strike is a definite threat next summer. By now, most of the 8 million cars sold in record setting 1955 are paid for. With a possible shortage of cars in June or July and the constant threat of higher prices, this may be the year that car buying surprises all the experts.

Steel — If autos come through, output of steel in 1958 could well set a record somewhere near 125 million tons. If they don't, the industry will likely turn out in excess of 117 million tons, this year's goal. That would require an average operating rate of only 83 per cent of the expected capacity (see STEEL, Sept. 16, p. 79).

Population—Population will continue to increase at the current rate—it will be in excess of 173 million by mid-1958. But family formations (important from a durable goods consumption viewpoint) will be relatively low until 1959 or 1960. Partially offsetting this will be the increase in personal income, which is rising at an annual rate of about 6 per cent this year.

In short, 1958 looks like another high plateau year prior to the next boom expected around 1960.

Trends Fore and Aft

• New orders and shipments of resistance welding equipment in August fell below July levels, and backlogs declined over $1 million, reports the Resistance Welder Manufacturers Association. One manufacturer reports he has about three-fifths as much business on the books now as he had in the comparable 1956 period.

• New orders for foundry equipment in July plummeted to their lowest depth since January, 1955, says the Foundry Equipment Manufacturers Association. (See chart, Page 64.)

• Average hourly wages of production workers in the metalworking industry continue to set records despite the general decline in the number employed (see charts, pp. 64-65) and a slight contraction in the workweek.

• Member companies of the Plumbing Brass Institute predict sales in this half of 1957 will fail to equal those in the corresponding 1956 period. However, there was less caution regarding the fourth quarter than third.

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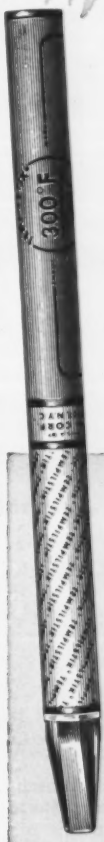

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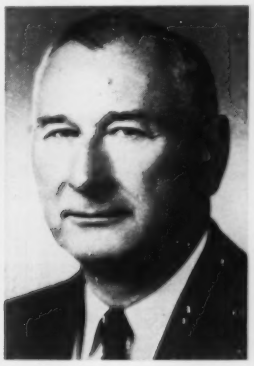
Fenn Mfg. div. sales manager

ROBERT R. RHODEHAMEL
National Acme v. p.-gen. sales

W. C. HIGDON
Sheffield works manager



FRANK L. MAGEE
Alcoa president

John H. Charpentier was made sales manager, machinery division, **Fenn Mfg. Co.**, Newington, Conn.

Robert R. Rhodehamel was elected vice president, **National Acme Co.**, Cleveland. He is general sales manager.

Wilbur L. Kennicott, head of engineering at **Kennametal Inc.**, Latrobe, Pa., was elected a vice president.

Roland L. Guerin Jr. was appointed director of special projects for **Hufford Corp.**, El Segundo, Calif. He will direct development and sales of Spin Forge machines.

Herbert G. Lindberg was made general manufacturing manager of **Ford Motor Co.'s** aircraft engine division, Chicago. He is succeeded as general production manager by **John McLachlan.** Mr. Lindberg succeeds **J. A. McCabe**, now general manufacturing manager of Ford's chassis parts division, Sterling, Mich.

Farrel-Birmingham Co. Inc., Ansonia, Conn., appointed **Robert J. Horning** manager of roll grinder sales to succeed **Harlan J. Hauser**, made assistant sales manager of Consolidated Machine Tool Div., Rochester, N. Y.

Robert W. Carvell joined the sales staff of **Henry Valve Co.**, Melrose Park, Ill., to head its newly expanded program on high pressure forged steel fittings and valves for industrial application. He was sales manager, Bohn-Betz Div.

W. C. Higdon was made works manager at the Houston plant of Sheffield Div., **Armco Steel Corp.** He succeeds the late **F. Ray McFarland. K. P. Campbell** was named general superintendent of operations and is succeeded as works metallurgist by **G. W. Brooks**, former process metallurgist. **C. L. Lloyd Jr.** was made general superintendent-services. At Armco's Baltimore Works, **Lee F. Weitzenkorn** was made assistant to the works manager. Formerly Armco's works metallurgist, he is succeeded by **John S. White**, who will be in charge of the metallurgical department.

William C. Denison was elected a vice president, **American Brake Shoe Co.**, New York, and was appointed to the operations policy committee. He is president of Brake Shoe's Denison Engineering Div.

H. M. Baker was made general manager of **Toledo Rotary Tool Co.**, Toledo, Ohio.

John J. Wiest was named to the new post of technical director, locknut department, **Standard Pressed Steel Co.**, Jenkintown, Pa. He was sales manager, Flexloc locknut products, recently consolidated with special aircraft nut-type fasteners to form the locknut department.

Frank J. Newman was made marketing manager, **Process Instruments Div.**, Beckman Instruments Inc., Fullerton, Calif. He was sales manager.

Frank L. Magee was named president and **I. W. Wilson** chairman of **Aluminum Co. of America**, Pittsburgh. **Harold C. Erskine** was elected a vice president. Mr. Wilson, president since 1951, succeeds **Arthur V. Davis** who retired in August. Mr. Magee was executive vice president.

A. H. Schmal was appointed general sales manager, **Long Mfg. Div.**, Borg-Warner Corp., Detroit. He was sales manager of special products. **Roy Norton** was made director of engineering.

Lawson Wile was made foundry superintendent, **Wysong & Miles Foundry Inc.**, Greensboro, N. C. He was with Lynchburg Foundry Co.'s research and development department.

D. F. Adams was made general sales manager, **Colson Corp.**, Elyria, Ohio. He was sales manager.

American Ship Building Co., Cleveland, elected **E. B. Williams** vice president-sales, a new post. He was vice president-engineering and is succeeded by **S. A. Midnight. Oscar Hayes** was made manager of the Lorain, Ohio, shipyard to replace **Gordon Stafford**, now in the Cleveland office as assistant to the vice president-operations.

Dr. M. A. Miller was named chief of the new foil and packaging division of **Alcoa Research Laboratories**, New Kensington, Pa., Aluminum Co. of America. He was assistant chief of the labo-

L. J. FAGEOL

WILLIAM H. COLEMAN

Twin Coach executive positions

ARTHUR H. BRANSTAD

WILLIAM J. EDMUNDS JR.

Kaiser Aluminum industrial div. posts

ratories' process metallurgy division.

William H. Coleman was elected president, **Twin Coach Co.**, Kent, Ohio. **L. J. Fageol**, former president, succeeds his father, **F. R. Fageol**, who retired as chairman.

Herman A. Ey Jr. was made manager of cleaner sales, **Hanson-Van Winkle-Munning Co.**, with headquarters at the Grand Rapids, Mich., plant.

William G. Gaylord was made San Francisco district manager, **Anaconda Wire & Cable Co.** He succeeds **Frank B. Dickey**, assigned to executive offices in New York.

John D. Saussaman, superintendent of **Kaiser Steel Corp.'s** three blast furnaces at its Fontana, Calif., plant, was made division superintendent of the plant's iron and steel division.

Charles W. Barrett will succeed **E. I. Evans** as manager, southern district, **Republic Steel Corp.**, at Gadsden, Ala., effective Nov. 1. Mr. Barrett, manager of the Buffalo district, will be succeeded by **Harry H. Northrup**, assistant district manager. **E. W. Carlson**, superintendent of bar mills, Cleveland steel plant, will succeed Mr. Northrup at Buffalo.

Howard Ellerhorst Jr. joined **Angier Adhesives Div.**, Interchemical Corp., Cambridge, Mass., as vice president and director of sales.

David F. Shaw was elected a vice president, **Henry J. Kaiser Co.** He will join Kaiser Engineers Div., Oakland, Calif., on Oct. 1.

In the industrial division, **Kaiser Aluminum & Chemical Corp.**, Oakland, Calif., **Arthur H. Branstad** was named manager-sheets and plates; **William J. Edmunds Jr.**, manager-extrusions and forgings.

John C. Abbey was appointed chief engineer, Jackson engineering department, **Aeroquip Corp.**, Jackson, Mich. He was product engineer in charge of research and development of self-sealing couplings.

Walter J. Cooper was made general sales manager, **Ford Div.**, Ford Motor Co., Dearborn, Mich. He succeeds **Charles R. Beacham**, now vice president of Ford and assistant general manager, Ford Div.

Harold Gassner was made sales manager, **Johnstone Foundries Inc.**, Grove City, Pa. He was vice president of Rosedale Foundry & Machine Co. **George Johnstone III** was elected vice president. **Charles L. Masson** was made foundry superintendent.

At the Ambridge, Pa., plant, **Spang - Chalfant Div.**, National Supply Co., **Joseph A. Frederick Jr.** was named superintendent, bar mill; **John S. Brown**, superintendent, collar and rod department. At the **Spang-Howarduct Div.**, Melrose Park, Ill., **Edward A. Scanlon** was named sales manager; **James W. Hudson**, chief field engineer.

Beckman & Whitley Inc., San Carlos, Calif., divided its operations into a missile products division and an instrument division. **E. William Place** was made manager, missile products; **John C. Beckman**, manager, instrument division.

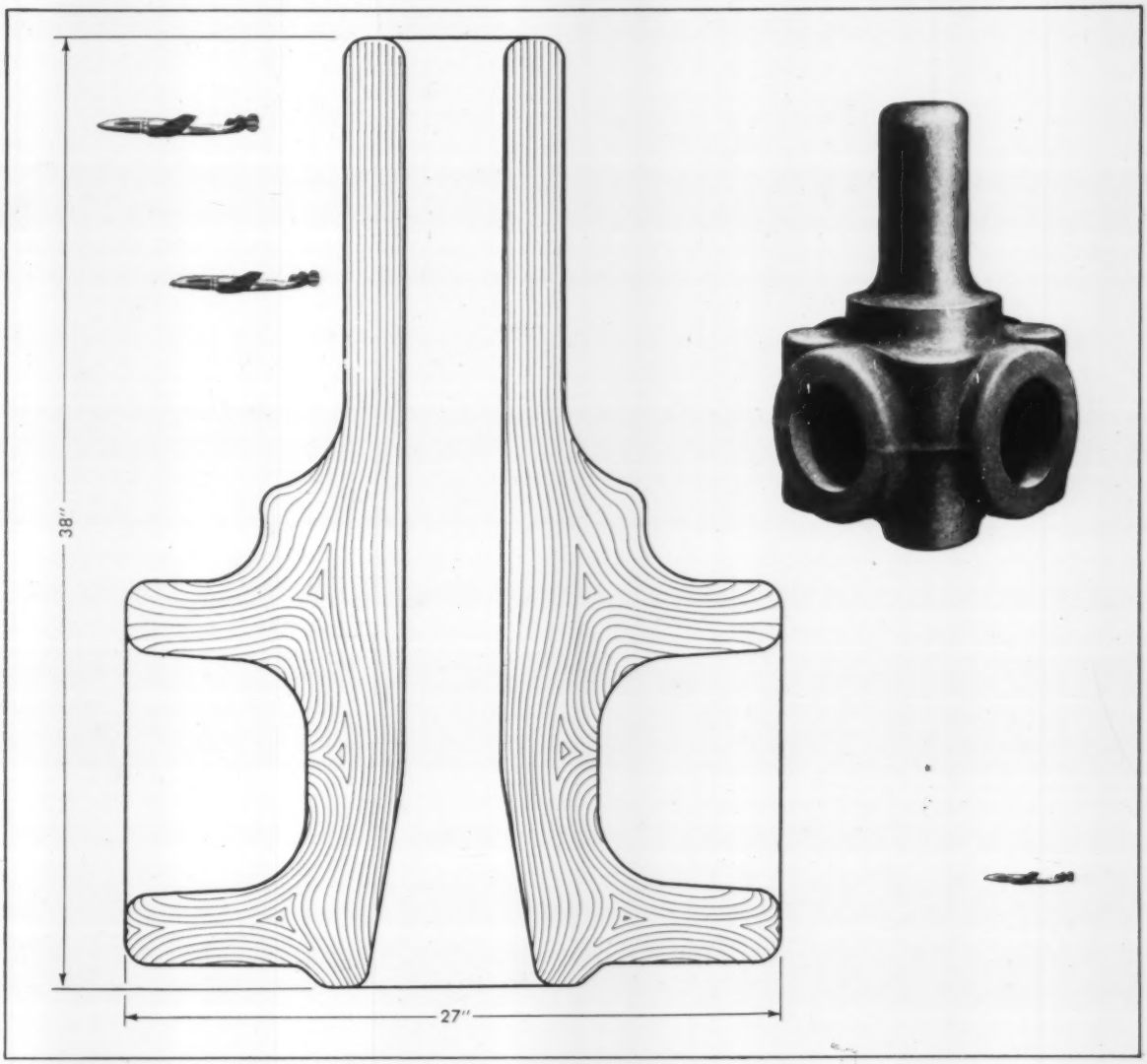
Named general managers for **Clevite Corp.'s** electronics activities, Cleveland, are: **Curtis B. Hoffman**, Brush Instruments Div.; **James D. Lightbody**, electronics

HAROLD GASSNER

GEORGE JOHNSTONE III

CHARLES L. MASSON

appointments announced by Johnstone Foundries



THE SPLIT-DIE FORGING SOLUTION FOR TURBOPROP TORSION

This big Turboprop propeller hub for Curtiss-Wright was turning up a storm in design circles. Specifications called for 2680 lbs. of A.I.S.I. 4355 modified aircraft quality steel to be forged and heat treated to high strength levels, all of which is not unusual except for one thing. The tremendous power transmitted through the neck section of the hub subjected this area to unusual stresses. Grain structure was a prime consideration. This presented a problem because conventional forging methods could not produce the desired grain flow pattern.

The Cameron split-die forging process solved the problem for Curtiss-Wright. In a single pass through Cameron's largest side-ram press, a glowing billet was pierced from six different directions and changed into the near final shape shown above. Grain structures were exactly right. As an added benefit, far less machining time was required to complete the hub.

This hub is a striking example of Cameron's ability to economically solve design problems through the use of a new forging concept. Shapes and sizes formerly considered impossible to forge in closed dies have become routine procedure with this revolutionary technique. If you have a component problem that forces you to accept castings where forging quality is desired, or if conventional forging processes fail to give you the metallurgical quality or economy that you require, write, call or come by . . .

Cameron
IRON WORKS, Inc.
SPECIAL PRODUCTS DEPARTMENT
P. O. Box 1212, Houston, Texas

J. D. DICKERSON
Crucible mgr.-steel production

CLYDE G. DAVIES
Armco Div. v. p.-operations

DALE V. CROPSEY
Elgin Watch v. p.

ANDREW W. ROSE
Byron Jackson executive post

WILLIAM E. GRACE
Fruehauf Trailer exec. v. p.

JOHN W. BUSKIE
TP&C vice president

components division; **Thomas J. Lynch**, ordnance division.

Andrew W. Rose was elected vice president and assistant to the president at **Byron Jackson Div.**, Borg-Warner Corp., Los Angeles. He is also a vice president of Borg-Warner. Mr. Rose was vice president-general manager, Petro-Mechanics Research Div., Borg-Warner laboratory at North Hollywood, Calif.

William E. Grace was elected executive vice president, **Fruehauf Trailer Co.**, Detroit. He was general manager of Hobbs Trailers in Ft. Worth, Tex., and vice president of Fruehauf since acquisition of Hobbs in 1955.

William A. Anderson was elected vice president and general manager of **Associated Spring Corp.'s** Puerto Rico Inc., new subsidiary in Puerto Rico.

Gerald T. Hughart was named general manager of **Klemp Metal Grating Corp.**, Los Angeles.

John W. Buskie was elected a vice president of **Tennessee Products & Chemical Corp.**, Nashville, Tenn., a division of the chemical, paint, and metallurgical department of Merritt-Chapman & Scott Corp., parent company.

Harry S. Schweinsberg was made assistant general sales manager, **Harbison-Walker Refractories Co.**, Pittsburgh.

Schroeder Mfg. Inc., Long Beach, Calif., appointed **William H. Clark** vice president-manufacturing.

Robert Peterson was appointed to the stainless steel sales staff of **N. E. Slavin & Co.**, Somerville, Mass. He was with the stainless steel department of Brown-Wales Co.

John J. Flaherty was made assistant to the general manager of **Atomics International Div.**, North American Aviation Inc., at Canoga Park, Calif. He was manager of the Chicago operations office of the Atomic Energy Commission.

J. D. Dickerson fills the new post of manager-steel production, **Crucible Steel Co. of America**, Pittsburgh.

Clyde G. Davies, assistant vice president, was made vice president-operations, Armco Div., **Armco Steel Corp.**, Middletown, Ohio. He succeeds **Robert S. Gruver**, now administrative vice president, personal and public relations, replacing **Charles H. Murray**, retired.

Elgin National Watch Co., Elgin, Ill., elected **Dale V. Cropsey** vice president in charge of industrial divisions.

H. C. Wallace, assistant regional sales manager-southern region, **Air Reduction Sales Co.**, was made regional sales manager to succeed **M. G. Wicker**, resigned. He is at Houston.

O. H. Mackley was made vice president - general manager, **Hycon Electronics Inc.**, Pasadena, Calif., subsidiary of Hycon Mfg. Co.

Ogden W. Boden was named vice president-engineering, **Stanley Aviation Co.**, Denver.

Charles J. Masacek was elected vice president, **Seneca Steel Service Inc.**, Buffalo, subsidiary of Production Steel Coil Co. He was general manager.

Robert H. Vredenburg was made manager-eastern operations, marketing division, **American Electronics Inc.**, Los Angeles.

OBITUARIES...

Carl Kipp, 56, owner of **Kipp Mfg. Co.**, Evanston, Ill., died Sept. 13.

Isaac Black, 79, retired vice president-general manager, **Russell & Erwin Div.**, American Hardware Corp., New Britain, Conn., died Sept. 9.

Phil Ake Sr., operator of **Diamond Casting Co.**, Johnsonburg, Pa., died Sept. 10.

Franklin R. Hoadley, 67, retired president, **Farrel-Birmingham Co.**, Ansonia, Conn., died Sept. 12.

IN CUTLERY, TOO,

Sharonsteel Quality STANDS OUT

• Cutlery manufacturers know well the name SHARON, for in the past five decades SHARON has excelled in the production of steels used in the manufacture of implements for cutting.

From exquisite carving blades to rugged chain saw teeth, razor sharp scalpels, agricultural and earth moving equipment SHARON provides the edge holding and abrasion resistant steels manufacturers can trust.

If you make products that require cutting edges that endure we suggest that you contact the SHARON representative nearest you and take advantage of this vast library of experience.

SHARONSTEEL

For 56 Years a Quality Name in Steel

174

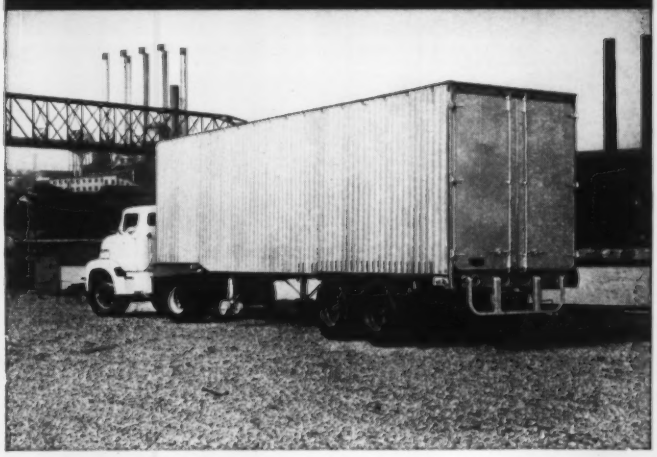
SHARON STEEL CORPORATION, SHARON, PENNA.

CHICAGO, CINCINNATI, CLEVELAND, DAYTON, DETROIT, GRAND RAPIDS, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, NEW YORK, PHILADELPHIA, ROCHESTER, SAN FRANCISCO, SHARON, SEATTLE, MONTREAL, TORONTO

You can draw and form them LITTLE

. . . . . .

or fabricate them BIG



with the new A-L low-nickel STAINLESS GRADES

In the top photograph, the fabrications you see are a mixing bowl, a tea-kettle base, a lock case and a patented shoe fastener: all made of A-L Type 201 or 202 chrome-manganese low-nickel stainless. The finish is good, the steel handled the same in the presses as Types 301 or 302, and similar drawing, buffing and polishing procedures were followed.

As in the lower illustration, the chrome-manganese low-nickel grades are being used also for fabrications as large as truck trailers and railroad coaches. Again, forming qualities and weldability present no problems, and results are entirely satisfactory.

Sum it all up and this is the answer: you *won't* encounter any particular differences in fabricating the 200-series of stainless steels . . . you *will* find some advantage in price, and a very important factor of much greater availability in times of nickel shortage. ● Why not take advantage of our pioneering experience with the low-nickel grades—let us help you use them. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

WSW 6060

WRITE FOR THE ASSISTANCE YOU NEED

1. "TECHNICAL STUDIES #3"

. . . essential information on the composition, properties, fabricating methods and applications of AL chromium-manganese, low-nickel stainless steels. *Write for your copy.*

2. TEST SAMPLES

. . . We'll be glad to supply engineering assistance, and actual samples of these 200-Series steels for testing under your processes and conditions.

ADDRESS DEPT. S-932

For Stainless Steel in ALL Forms—call

Allegheny Ludlum

Warehouse stocks carried by all Ryerson Steel plants

AL® STAINLESS STEEL

Solar Steel Grows

Facilities will be enlarged at Cleveland, Detroit, Chicago, and other points under five-year plan

SOLAR STEEL Corp., Cleveland, will spend $3.5 million on a seven-point program of consolidation and expansion over the next five years. Daniel A. Friedman, president of the steel warehousing and processing firm, says the moves will strengthen the company's merchandising position in the six major marketing areas in which it operates plants.

Solar's program includes: New and larger facilities (costing at least $500,000) at Cleveland to enable it to diversify its lines there; consolidation of two plants at Detroit in a new facility at a cost of $1.3 million; and further expansion of the Chicago plant at a cost of $500,000. A proprietary product will be added, which the company will manufacture and sell to eastern seaboard customers from its Union, N. J., plant. The Worcester, Mass., Nashville, Tenn., and Hanover, N. H., plants also will be expanded.

The company is simplifying and improving its corporate structure, eliminating fringe activities, and selling its warehousing operations at Cincinnati and Los Angeles.

In addition to Mr. Friedman, the company's new management team includes: Stanford J. Friedman, executive vice president; R. N. Harwood, administrative vice president; J. B. Ribakoff, administrative vice president; I. R. Zwick, treasurer; P. Haber, secretary; H. Trumbull, Worcester Div. manager; S. W. Solomon, vice president, Hanover Div.; N. M. Becker, director, International Div.; H. McQuown, Cleveland Div. manager; A. L. Rudel, Detroit Div. manager; A. Miller, Nashville Div. manager; A. Lang, Chicago Div. manager; L. Hagerty, River Rouge Div. manager.

Offers Bar Straighteners

Sir James Farmer Norton & Co. Ltd., Manchester, England, licensed Sutton Engineering Co., Pittsburgh, to manufacture a complete line of Farmer Norton, 2-roll bar straightening and polishing machines. Precision straighteners will be built in all sizes; machines that simultaneously straighten and polish will handle material ⅛ to 9 in. diameter. They'll work a wide range of bars, from low-tensile nonferrous metals up to heat treated ferrous alloys, including stainless, titanium, and uranium.

Sharon Forms New Unit

Sharon Steel Corp., Sharon, Pa., organized a Product Development & Sales Research Dept., to be under the direction of Robert A. Atkins, metallurgist and chemical engineer. The department will work closely with industry, especially automotive manufacturers, in anticipating needs for new superalloy steels and reactive metals, such as titanium and zirconium.

Continental Changes Name

Continental Tooling Service Inc., Dayton, Ohio, changed its name to Continental Technical Service Inc. The firm handles in-plant engineering assignments relating to product development, design, production, testing, plant layout, and marketing. It also designs special tools and equipment for industrial and military applications. ConRay Corp., Dayton, is the electronic and manufacturing division.

Rochester Plant Sold

American Brake Shoe Co., New York, sold its Railroad Products Div. plant in Rochester, N. Y., to R. T. French & Co., that city. American Brake Shoe's wheel operations will be conducted in plants nearer the steel centers.

Sells Crankshaft Business

Howard Industries Inc., Buffalo, sold the business of its Crankshaft Div. to Carrier Corp., Syracuse, N. Y., and its plant at 1721 Elmwood Ave., Buffalo, to the Posting Equipment Corp., that city. Howard Industries has retained its general manufacturing business which it will operate in about half the 30,000 sq-ft Elmwood Avenue plant.

Firm Ownership Changes

Nuclear Metals Inc., Cambridge, Mass., announces its transition from a government-owned atomic energy research facility to complete private ownership and operation. Personnel and facilities are available to industry on a consulting basis. Laboratory equipment will be moved to buildings under construction in Concord, Mass. The firm was formed in 1954 by Arthur D. Little Inc., Cambridge, Mass., and Allegheny Ludlum Steel Corp., Pittsburgh.

Hein-Werner Buys Line

Hein-Werner Corp., producer of hydraulic automobile jacks and auto body straightening equipment, purchased the hydraulic pump, motor, valve, and control business of Century Engineering Co. Both companies are in Waukesha, Wis.

Abrasive Firm To Build

Bay State Abrasive Products Co., Westboro, Mass., plans to build a plant and warehouse facilities in the Opal Cliffs-Capitola sector of Santa Cruz County, Calif. It's the latest step in the company's $2-million expansion program announced a year ago.

Deere & Co. Expanding

Deere & Co., Moline, Ill., will erect four additions to its Dubuque (Iowa) Tractor Works. They will add 141,000 sq ft of space and about 30 per cent to the plant's manufacturing capacity.

Starts Nickel Project

Frederick Snare Overseas Corp., a wholly owned subsidiary of Frederick Snare Corp., New York, has signed a contract to perform all fieldwork in Cuba for Freeport Sulphur Co.'s $119-million nickel-cobalt project. The Cuban portion represents an investment of about $75 million. The plant and facilities for mining and concentrating the nickel-cobalt ores will be at Moa Bay on Cuba's northeast coast. The concentrates will be refined in the U. S. Annual capacity will be 50 million lb of

nickel and 4.4 million lb of cobalt. Work at Moa Bay is scheduled for completion by July, 1959.

Tube Turns To Expand

Tube Turns Div. of National Cylinder Gas Co. will increase its manufacturing area about 40 per cent by converting buildings next to its main plant in Louisville. The $400,000 construction program will provide facilities for products now in the design and development stage and for expansion of the welding fitting and custom forging departments. New machines will expand production facilities. Construction will be completed in about ten months, says John G. Seiler, Tube Turns' president.

Harvey Sets Plant Opening

The new aluminum reduction plant of Harvey Aluminum, now under construction at The Dalles, Oreg., is scheduled to be in partial operation early in 1958. It will have a rated annual capacity of 54,000 tons and will use more than 100,000 tons of Japanese alumina a year.

Offers Larger Extrusions

Crescent Carbon Corp., Rosamond, Calif., is extruding large diameter synthetic graphite electrodes for steelmaking furnaces on a 2500-ton hydraulic extrusion press. The firm now can make electrodes 45 in. in diameter, weighing 5 tons. It also will produce anodes for caustic and chlorine cells, molds, and special shapes for atomic energy applications and large graphite slabs for new tooling uses in the aircraft industry.

ASSOCIATIONS

American Die Casting Institute Inc., New York, re-elected these officers: President, C. J. Sheehan, Garwood Die Casting Div., Aluminum Co. of America, Garwood, N. J.; vice president, C. L. Anthony, Hoover Co., North Canton, Ohio; secretary, David Laine, ADCI; and treasurer, W. J. Parker, ADCI. The annual Doehler Award, highest honor of the diecasting industry, was presented to James N. Smith of the Aluminum Co. of America, Pittsburgh.

NEW PLANTS

Firth Sterling Inc., Pittsburgh, is constructing its fourth tungsten carbide sintering facility in the U. S. at Los Angeles. It is scheduled to be in production by Dec. 1 and will make carbide cutting tool tips and blanks, as well as carbide wear parts.

Appleton Electric Co., Chicago, will erect a warehouse and will install limited manufacturing facilities at Bandini Boulevard and Malt Avenue, near Maywood, Calif. The company makes fittings for the electrical industry. Its subsidiary, Illinois Malleable Iron Co., Chicago, makes pipe fittings for the plumbing industry.

National - Standard Co., Niles, Mich., opened a warehouse at 68 New Britain Rd., Plainville, Conn. Items stocked are music and stainless steel spring wire. The firm makes ferrous and corrosion-resistant wire, braid, wire cloth, and high-carbon flat steel. A. J. Sidoti is in charge of the warehouse.

Walworth Co., New York, manufacturer of valves and pipe fittings, is building a $5-million brass valve plant and a research engineering center at Braintree, Mass. Many of the company operations presently performed in 18 buildings in Boston will be consolidated in the two new buildings, scheduled for completion late this year.

Eureka Metals Supply Co. opened a warehouse at 551 Macy St., Los Angeles, to distribute U. S. Steel Corp.'s line of stainless steel products, including sheets, plates, rods, bars, and wire.

Stromberg-Carlson, a divison of General Dynamics Corp., is constructing an engineering department building at its plant at 1895 Hancock St., San Diego, Calif. It will increase space at that plant by 50 per cent.

CONSOLIDATIONS

Directors of **Copperweld Steel Co.**, Pittsburgh, and **Superior Steel Corp.**, Carnegie, Pa., formally approved a plan under which Superior will merge into Copperweld. Stockholders of both companies will vote Nov. 8 on the proposal. If approved, Carl I. Collins, now president of Superior, will be vice president of Copperweld in charge of the Superior Steel Div.

Kelsey-Hayes Co., Detroit, will merge with **Heintz Mfg. Co.**, Philadelphia, effective Sept. 30, subject to approval by Heintz stockholders. Plans call for installation of extensive new production facilities in the Philadelphia plant.

McJunkin Corp., Charleston, W. Va., purchased **Chandler-Boyd Co.**, Leetsdale, Pa., distributors of pipe, valves, fittings, stainless steel, and tools.

Clary Corp., San Gabriel, Calif., consolidated its **Aircraft** and **Automatic Controls** divisions into a single unit, Clary Dynamics. Paul J. Meeks, vice president, is general manager of the new division which will develop and manufacture aircraft and guided missile components.

NEW ADDRESSES

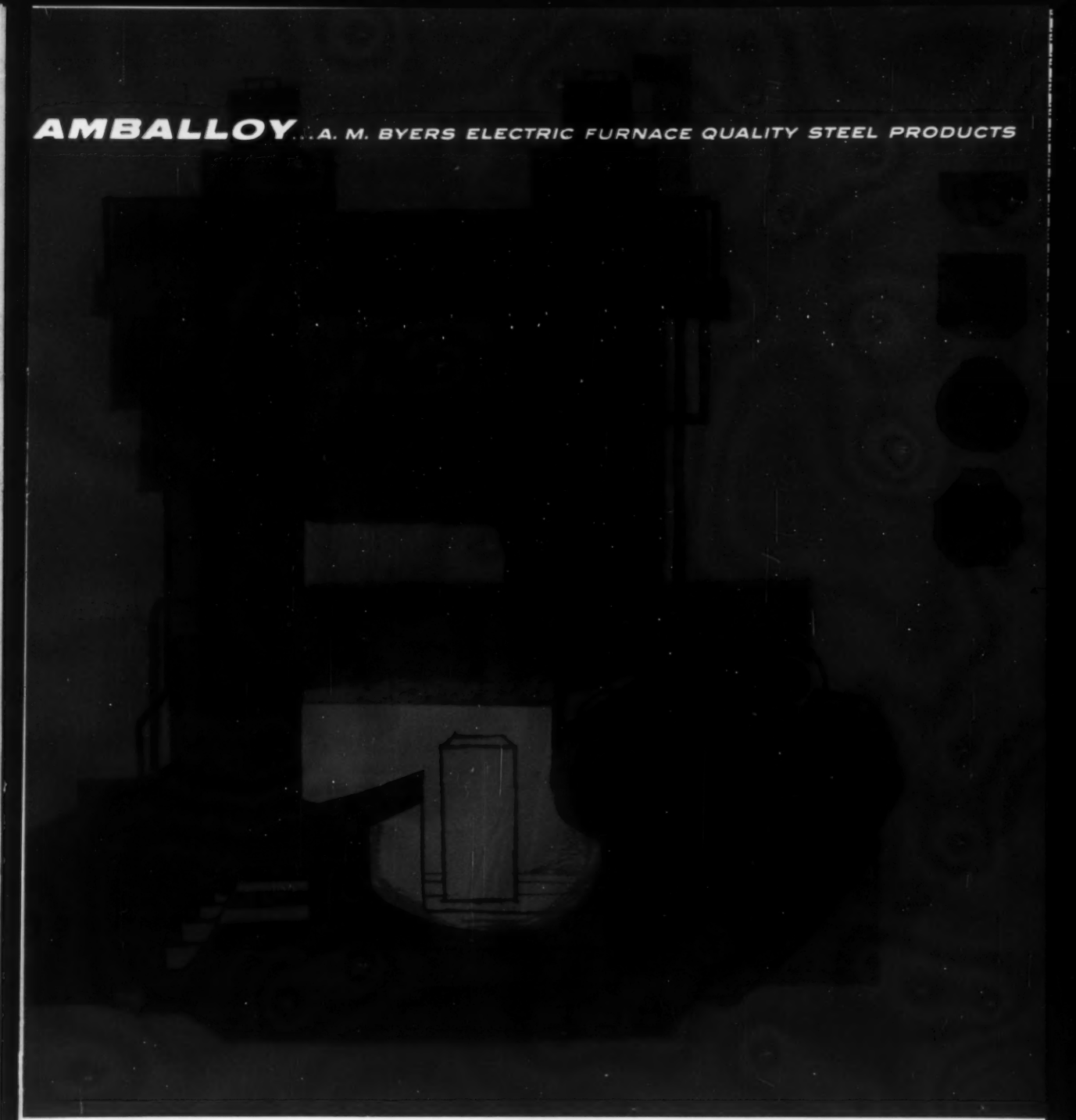
Somma Tool Co., manufacturer of circular form tools and blanks, moved to a plant on Scott Road, Waterbury, Conn.

Die Supply and **Press** divisions of **E. W. Bliss Co.**, Canton, Ohio, opened a new warehouse and drill assembly facility at 1254 Stanley Ave., Dayton, Ohio.

A. Milne & Co. Inc., distributor of solid and tubular tool steels, moved its New York sales office and warehouse to 636 N. Michigan Ave., Kenilworth, N. J.

Babcock & Wilcox Co.'s Refractories Div. moved its New York district sales office to 135 Cedar St., New York 6, N. Y.

AMBALLOY...A. M. BYERS ELECTRIC FURNACE QUALITY STEEL PRODUCTS



FROM HIGH-GRADE CONVERSION FACILITIES...BETTER END PRODUCTS

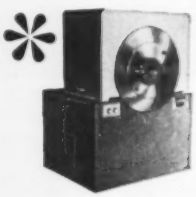
The consistent quality of AMBALLOY steels—stainless, alloy and carbon—is rooted in the exacting quality control of our high-grade conversion facilities. The detailed attention we give to every step of the conversion process means better end products for users of Amballoy specialty steels.

Important too, is the fact that our facilities are available for your conversion needs. We'd like to discuss with you the advantages of using our special processing operations.

And to provide you with helpful solutions to your material selection problems, Byers offers a staff of highly trained metallurgists. We can serve you with knowledge and facilities that put your order where you want it, when you want it. Check Byers first. Write or call for details. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

A growth company with the emphasis on quality and service **A. M. BYERS COMPANY**

How much are you paying for the machine that isn't there?



If you are machining this part, or one like it, you may be paying 49 cents more on every dollar—*in material alone*—than you need to pay.

For 49% less material was used by making it on a Torrington Rotary Swaging Machine, which reduces metal instead of cutting it away. A smaller rod was grooved, and a washer was swaged into the groove. Production jumped from 80 to 260 pieces an hour—with unskilled labor!

You can put many operations on a Torrington Swager—pointing, tapering, reducing, sizing, forming inside contours and threads. With savings like these, your swager will shortly pay for itself.

See for yourself what swaging is and what it can do. Let us show you our new, 20-minute, full-color film on swaging. And write for our new catalog on Torrington Rotary Swaging Machines.

THE TORRINGTON COMPANY
Swaging Machine Division
150 North Street, Torrington, Conn.

TORRINGTON ROTARY SWAGING MACHINES

Technical Outlook

RESISTS MOLTEN ALUMINUM— Steel and cast iron parts withstand liquid aluminum when coated with chromium boride using a Borocote process developed by Metallizing Co. of America, Chicago. The coating can be used for the protection of thermocouple tubes, heat exchangers, and other parts used in aluminum coating equipment. The chromium boride is flame sprayed on the parts.

ZIRCONIUM TUBING—Bridgeport Brass Co., Bridgeport, Conn., announces a quarter million dollar contract for seamless Zircaloy-2 tubing for use in a large atomic electric power station. The company says it can make tubing from zirconium and the zircaloys $\frac{3}{8}$ to $2\frac{1}{2}$ in. in diameter with wall thicknesses 0.020 to 0.250 in.

ELECTRONIC STANDARDIZATION—Battelle's reliability engineering research division has a $300,000 contract to help the Signal Corps develop specifications for the procurement and standardization of electronic component parts and materials.

MEASURES ALLOYS— A new type A1000 batch computer has been developed to make it easier to get the right proportions of elements in an alloy melt. Constituents to be added are set up in the computer, and the controls are adjusted until the desired percentage of each element is indicated. The computer then shows the amount of each alloy needed for the batch. Nems-Clarke Co., a division of Vitro Corp. of America, Silver Springs, Md., made the instrument.

MORE IMPACT STRENGTH— A recent Air Force report released by Office of Technical Services says the impact resistance of cermets may be improved by use of a ductile metallic coating. The research was with K161B base cermets for use in gas turbines. Application of 0.018 in. electroplated nickel, bonded by a suitable vacuum heat treatment, raised the cermet's impact strength from 2.65 to 21.48 inch-pounds at room temperature and from 3.36 to 18.96 inch-pounds at 1800° F.

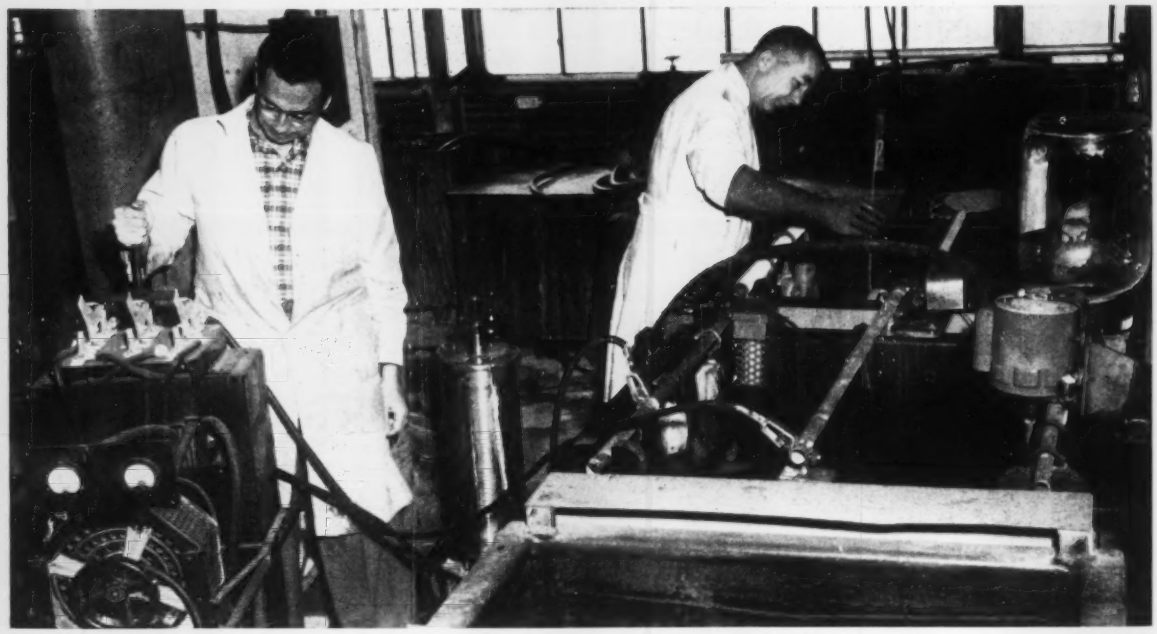
MAGNET POSSIBILITY— Ceramic permanent magnets now can be used in place of electromagnets for direct current motor fields, says Indiana Steel Products Co., Valparaiso, Ind. "Because our Indox magnets will not become demagnetized when opposed by powerful armature fields, it is now practical to use them for direct current motors of all sizes," points out James R. Ireland, director of engineering and research at Indiana Steel Products. Mr. Ireland says the motormaker gains production cost savings.

PRESS SAFETY— A 200-ton hydraulic press purchased by a maker of electrical appliances is equipped with an 18-in. curtain of light across the front pressing area. When the light is interrupted by the operator, the press stops. Hydraulic Press Mfg. Co., a division of the Koehring Co., Mt. Gilead, Ohio, made the press.

SHORT CUT— Metallurgical Consultants Inc., Maywood, Calif., has developed a process for brazing and heat treating precipitation hardening stainless steels in one operation.

MISSILE INSPECTION— One of the first buildings specifically designed for radiographic inspection of guided missile airframes is being finished at Reynolds Metals Co.'s parts division plant, Sheffield, Ala. It uses a 250 kv General Electric x-ray machine to check soundness of welded joints. Missiles are wheeled through heavily shielded motorized doors into the inspection room which is adjacent to the final assembly area. Ray Proof Corp., Stamford, Conn., designed the system.

Metalworking Outlook—Page 39 Market Outlook—Page 101



The electroplating bath used in the nickel sulfamate process

Nickel Plating Is Stress-Free

Elimination of the internal stress helps prevent premature fatigue failure. This method gives ductile coatings that have a flexible compressive and tensile strength

A SULFAMATE bath gives nickel deposits that are stress-free and have high tensile strength. The process is used by Ryan Aeronautical Co., San Diego, Calif., to salvage components for afterburners, ramjet and rocket engines. It builds the parts back up to their correct size.

Advantages — Most nickel deposits are characterized by high values of internal tensile stress. Some as high as 60,000 psi have been recorded. Stress causes peeling, cracking, crazing, warping, blistering, distortion, shrinkage, and failure of the plated metal.

The deposits resulting from this bath give stress-free deposits. They are smooth, ductile, have a slight sheen, and a fine grain structure. Chlorine inclusions are held to a minimum.

Hardness can be controlled within the range of 200 to 550 Vickers hardness number. The ductility ranges from 30 per cent elongation in 2 in. to a low of 6 per cent. Tensile strength can be varied from 60,000 to 130,000 psi.

Corrosion resistance is another property of the metal. Stress corrosion is eliminated since the deposits do not have any appreciable internal stresses.

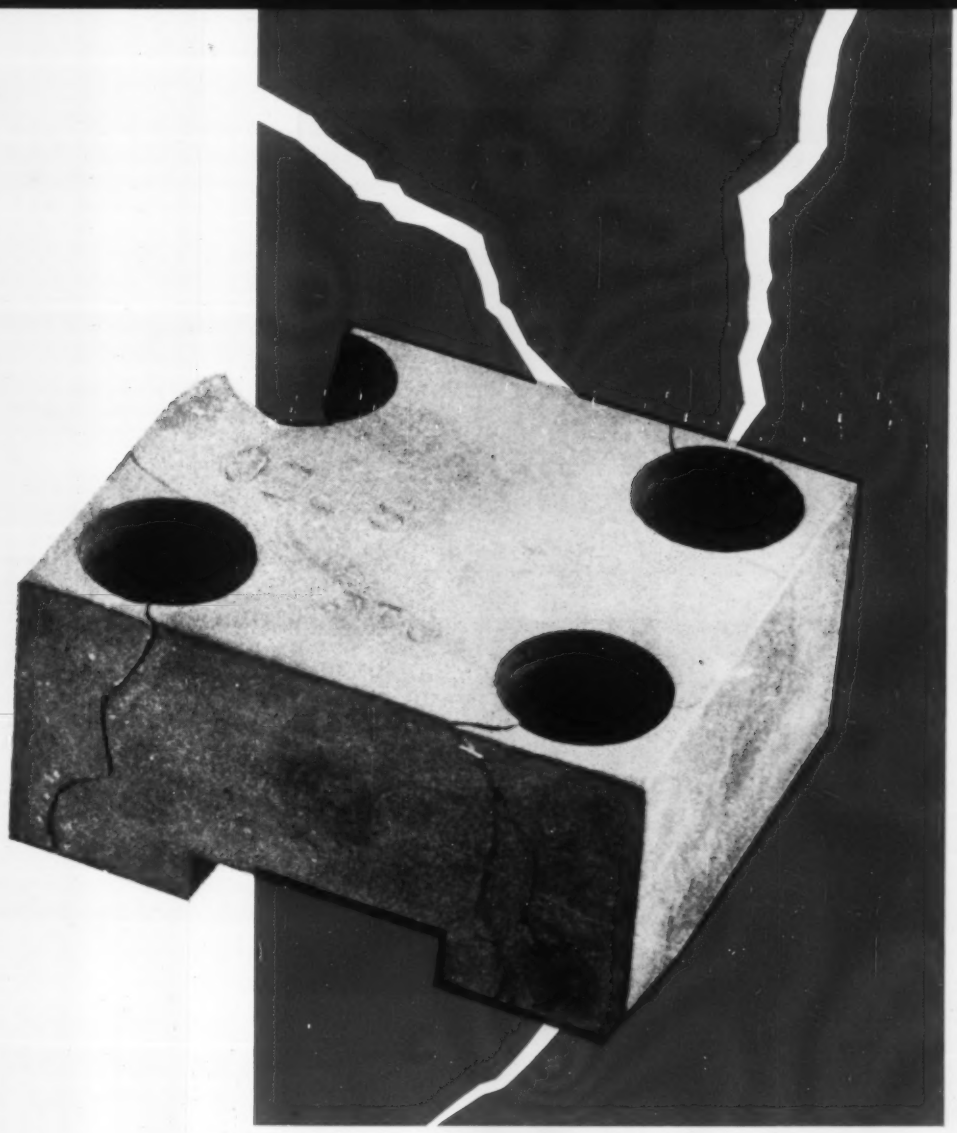
Bath—Sulfamic acid is similar to sulfuric acid. It is a white, crystalline, inorganic solid that is nonhygroscopic and nonvolatile. The acid is moderately soluble in water and produces solutions which are highly acid and compare in pH with those of the three common mineral acids—nitric, sulfuric, and hydrochloric.

Metal sulfamates are obtained from the reaction of an oxide or carbonate of the metal. The acid is monobasic with the sulfamate being formed by replacement of one of the hydrogen atoms.

A gallon of the bath contains 60 oz of nickel sulfamate, 12.2 oz of the nickel metal equivalent, 4 oz of boric acid, and 0.05 oz of a wetting agent.

The pH of the bath must be carefully controlled within the limits of 3.0 to 4.5. As the pH increases the compressive stress and the hardness of the deposit increase, to the detriment of the coating. Nickel carbonate raises the pH and sulfamic acid lowers it.

The bath temperature is closely controlled between 100 and 140° F. The hardness of the deposit decreases with an increase in temperature.



Edge distance in water hardening steels is a problem. This notching die has only 1/16 in. Correct design might have avoided its loss

How To Avoid Cracking Die Steels

Failures can be avoided with correct design, machining, heat treatment and material selection. Here are some rules suggested by Carpenter Steel Co.

PART ONE

TOOLS and dies that crack in service or during heat treatment mean shutdowns and disrupted schedules.

Such hazards can be eliminated by careful planning and control of these vital steps:

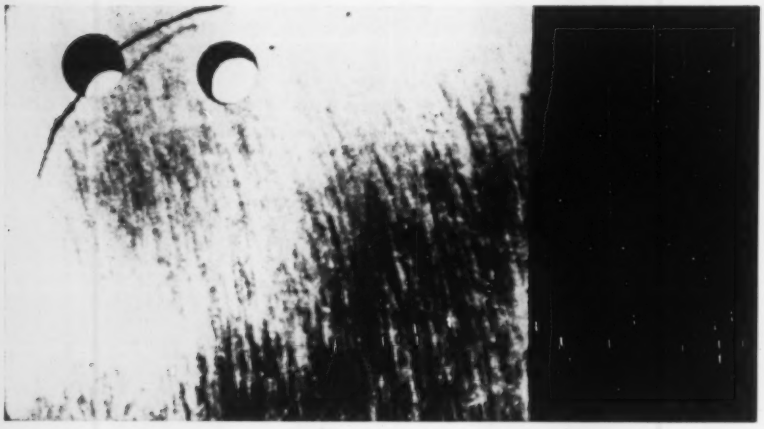
Design.
Machining.
Heat treatment.
Material selection.

Doing all four correctly results in high performance tools and dies. Here are some examples of what happens when you neglect them:

DESIGN

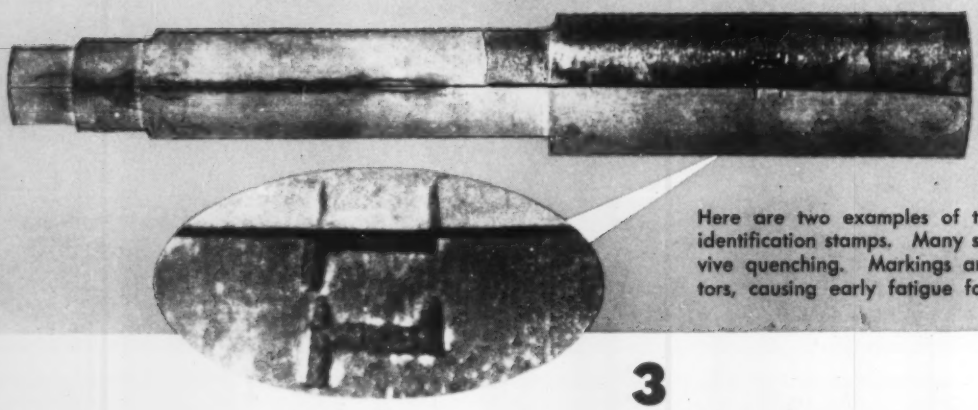
Poor die design frequently is the source of unsatisfactory performance and cracking during heat treatment.

The fundamental principles are



1

This die cracked because it was flash heated. Investigation showed that the two holes could have been moved easily—an example of poor design



Here are two examples of the effects of deep identification stamps. Many such parts don't survive quenching. Markings are stress concentrators, causing early fatigue failure

3

simple: The strength of steel depends upon its analysis, its quality, and heat treatment. The material cracks when it is subjected to forces greater than its ultimate strength.

A combination of these forces breaks tools:

1. Internal stresses set up during fabrication and heat treatment.
2. The external forces of service.

Occasionally, internal stress alone cracks parts during hardening. In other cases, internal stress may exceed 90 per cent of total strength so that light loads crack the tool.

Source of Trouble — The most serious internal stresses are developed during quenching. Differences in cooling rates of sections are a function of the size and shape of the piece (that is, the design). Plan shapes which will keep the temperature gradient at a minimum during quenching.

The die on Page 79 is a good example. It shows both sides of a combination bending and notching die made from a straight carbon, water hardening tool steel. The position of the holes is not too critical on the operating side (left) of the die. On the opposite side of the die some thought should have been given to the thin wall sections (1/16 in.)

Cause Is Combination—Fig. 1 shows what happens when a part is flash heated. Although the spacing of the holes is somewhat critical, there should be no danger of cracking this oil-hardening steel if properly handled. More important, there is no good reason for the two holes in the left corner. Their position could have been changed without difficulty.

Fig. 2 shows service failures. It is a fatigue break common to pneumatically driven tools. The fracture starts under the collar at the original machining lines.

Remember that any noticeable line or indentation serves as a nucleus for fatigue failure on shock tools. Also remember to include a generous radius at all supporting shoulders or collars. Both contribute to a premature failure.

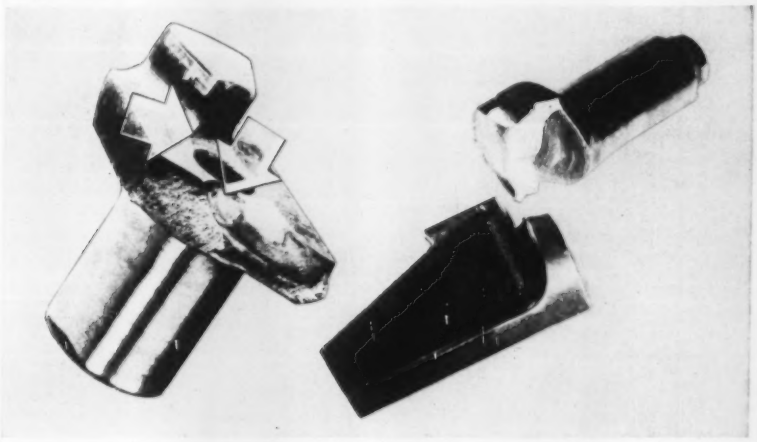
MACHINING

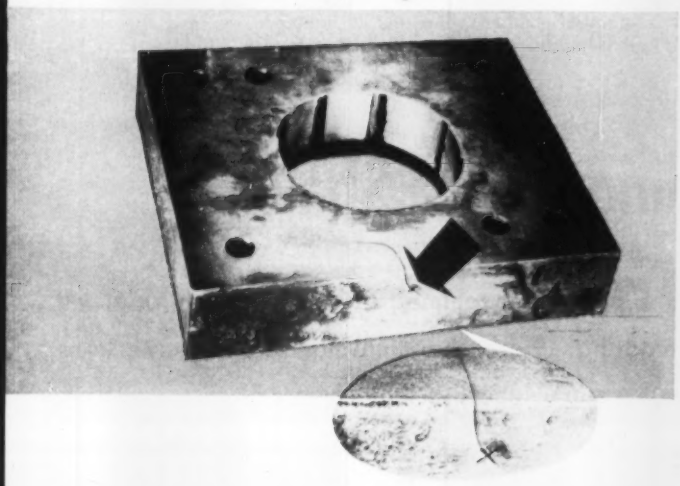
To eliminate cracking caused by poor workmanship, look for these:

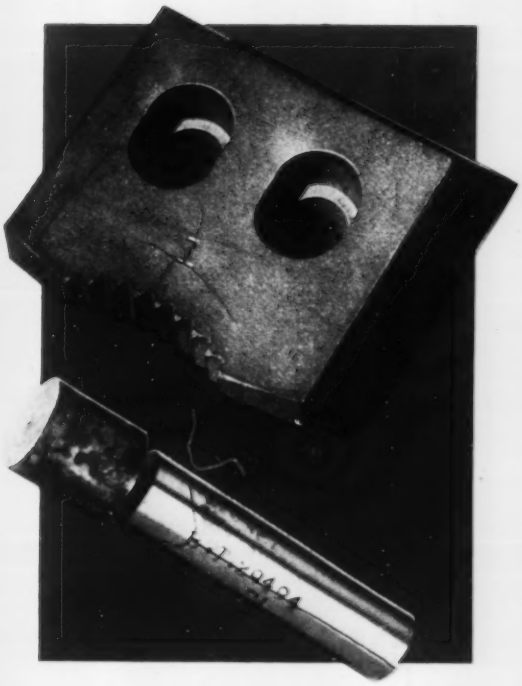
1. All surfaces should be smooth

2

Designers must remember that machining tool marks are stress raisers. These fractures start at the original machining lines. Include generous radiuses at all supporting shoulders

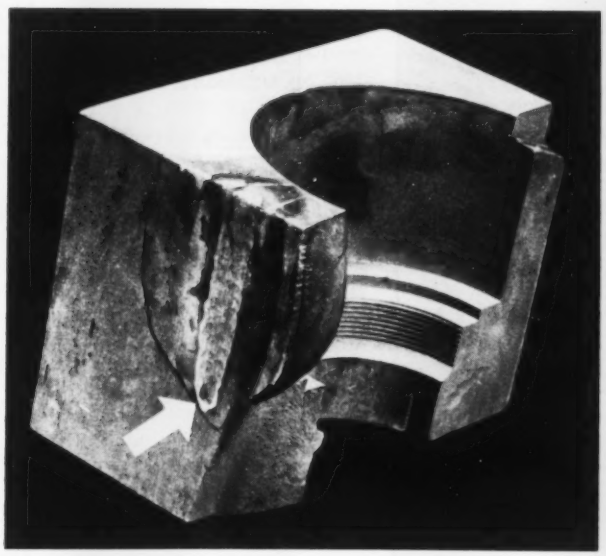






4

Even light stamp marks on parts with scale (bar bark) can be disastrous. Both examples failed in heat treatment. Machine down to sound metal is a good rule



5

This die was repaired by welding after an end mill cut through side wall. Failure to preheat and normalize with welding repair ruined rather than saved it

and accurately machined.

2. If possible, don't use stamp marks for identification. When necessary, they should be light and shallow.

3. Bark should be removed from surfaces of bars. The cut should be great enough to get under the decarburized layer on the surface of all hot-rolled, cold-drawn or forged steel bars.

Deep stamp marks plus failure to remove bar bark can be disastrous. The punch in Fig. 3 is an example. It is made from a straight carbon, water hardening tool steel. When quenched, the cracks apparently originated in a mark stamped on the major diameter which had none of the bark removed.

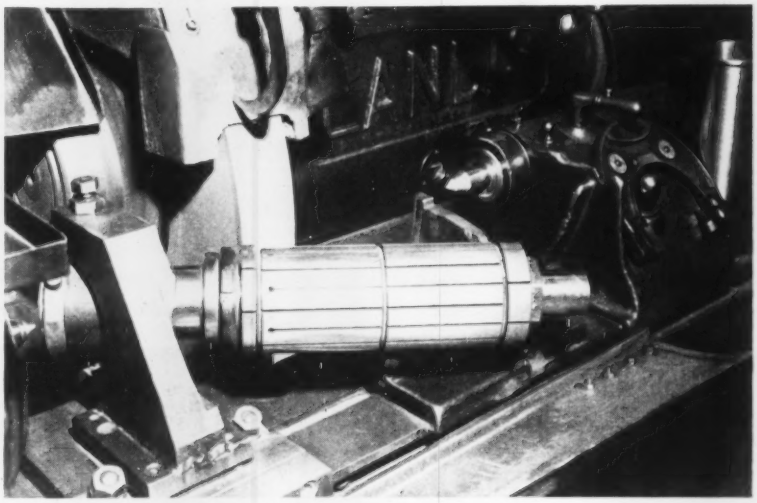
In a pinch, it's always a good idea to use the next larger bar size and machine it to size. The blanking die next to the shaft in Fig. 3 is made from a high carbon, high chromium, oil hardening steel. It is a standard type. The toolmaker was aware of the hazard of deep stamp marks (the letter "X" indicates it was stamped lightly). And the die was stress relieved before hardening—a regular practice.

Here's what caused the trouble: The usual bar size was not available, so the toolmaker used one that was the exact width of the completed die. Light stamping (Fig. 4) is usually satisfactory, but on surfaces from which no bark has been removed it can be disastrous.

Repairs—The die in Fig. 5 is an example of poor machining and repair practice. An end mill had cut through the side wall. The slot was hurriedly welded, faced off and made ready for heat treatment. No attempt was made to preheat the die before welding; the finished section was not normalized or stress relieved before heat treatment.

The operator, not knowing about the weld, followed standard heat treating procedure. With proper weld rod, technique and heat treatment, the die might have been given some useful life.

• *An extra copy of this article is available until supply is exhausted. Part II appears next week. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*



Segments in this mandrel expand when nut is tightened, holding the sleeve at the right. Tool is made by Western Tool & Mfg. Co., Springfield, Ohio

Grinding Costs Shaved

Mandrel can handle low volume parts and is easily adapted to special fixturing. Here's how International Harvester uses one to produce parts for truck motors

THE device in the illustration is an expanding mandrel. It is particularly adapted to grinding thin-walled parts such as sleeves and bearings.

Here is how International Harvester Co., Melrose Park, Ill., uses them.

Motor Parts—Three years ago, the firm tooled up for production grinding of dry liner sleeves for its Series 181 engine. Tolerance requirements: Outside diameter, within 0.001 in.; taper, within 0.0008 in.; wall thickness, 0.0015 in.; out of round, 0.0005-in.

One of the problems of machining thin-walled parts is avoiding distortion. Adequate support is absolutely necessary, and it must be applied as evenly as possible. Fixtures must be easy to load and unload and must not deteriorate from abrasive action or contact with coolants.

Harvester officials chose the expanding mandrel for this job and mounted it on a swing fixture to facilitate loading. Both are attached to a Landis grinder. The fixture swings out from the wheel so the operator can slip a sleeve on the mandrel. He expands the tool by tightening a nut with an open end wrench.

To unload, a nut on the driven end of the mandrel is tightened. Retaining springs in grooves contract the sleeve, permitting the workpiece to slide off.

Record—The mandrel has been operating satisfactorily at International Harvester for three years with little maintenance. Records show that arbor centers are ground every three weeks to hold runout within 0.0002 in. Center inserts are replaced every nine months. The mandrel shell is ground and chrome plated every 18 months.

The original tools, say Harvester officials, are still in service.

Electrode Quality Depends on Coating

It transfers essential minerals and purifiers to a weld deposit, providing great flexibility to match the job's requirements. Author explains function, importance

By HARRY F. REID JR.
Manager, Technical Service Div.
McKay Co., Pittsburgh

A WELDER'S molten puddle is an electric furnace in miniature.

Both use the same principle to control mechanical and physical properties of the molten metal. Steelmakers add alloys and purifiers during a heat. The electrode or its coating does the same for welders.

Welding quality depends on controlling additives with the coating. Here's how it's done and some factors that spell success or failure.

Why Add Alloys—Such materials in the molten weld serve two purposes: Purification and modification.

Purification is done by adding finely powdered ferromanganese or ferrosilicon to the electrode coating. On melting, the manganese or silicon combines with free oxygen in the puddle to form insoluble oxides. They float to the surface and dissolve in the slag.

Such materials aren't limited to scavenging. Metals transferred from an electrode coating make the weld deposit a special alloy.

Without that action, control of weld composition would be limited to wrought or cast materials in core wire. Some of the more important metallics that are added to coatings are shown in Table 1.

Outstanding Development—Low hydrogen electrodes are an example of how to alloy a weld deposit through an electrode coating.

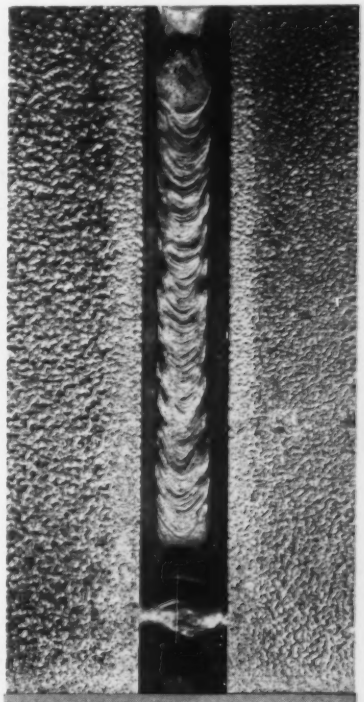
A single base coating formula on a mild steel core wire (0.10 carbon, 0.50 manganese) combined with certain alloying materials produces a wide variety of deposits. Table 2 (page 84) shows that mechanical properties are altered markedly by variations in the coating.

That comparison is only part of the story. Heat treating characteristics of weld deposits differ appreciably. It is frequently possible to select an alloy combination

TABLE 1

TYPICAL ADDITIVES FOR ELECTRODE COATINGS

Iron	Ferrochromium
Nickel	Ferrocolumbium
Chromium	Ferromolyb-
Manganese	denum
Aluminum	Ferrosilicon
Cobalt	Ferrotitanium
Tungsten	Ferrovanadium
Ferroboron	Ferromanga-
	nese



Identical root passes made with a composite, nickel-modified, austenitic manganese rod (top) and a conventional electrode of the same type (bottom) proves influence of coating on crack resistance

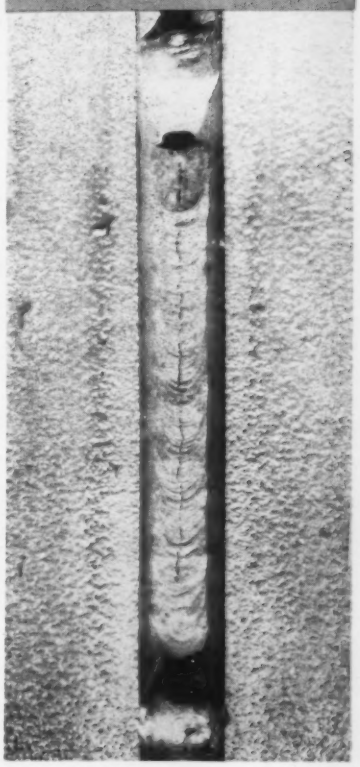


TABLE 2

DEPOSIT VERSATILITY OF LOW HYDROGEN ELECTRODES

(Variations are produced entirely by alloying elements in coating)

General AWS Classification	Typical Weld Metal Analysis						Typical Mechanical Properties (As Welded)	
	C	Mn	Cr	Ni	Mo	V	Ultimate tensile Strength, psi	% Elong in 2 in.
70XX	0.07	0.60	...	...	...	...	77,000	31
70XX	0.10	0.80	0.40	...	0.40	...	75,000	28
80XX	0.06	0.60	...	3.50	...	...	82,000	29
80XX	0.08	0.85	1.00	...	0.50	...	86,000	24
90XX	0.07	0.80	...	...	...	0.20	91,000	27
90XX	0.08	1.30	...	1.50	0.45	...	97,000	27
90XX	0.12	1.75	...	...	0.35	...	95,000	23
90XX	0.08	0.90	2.00	...	1.00	...	104,000	19
100XX	0.23	0.55	0.45	0.50	0.25	...	106,000	15
100XX	0.07	0.70	...	1.75	0.30	0.15	101,000	24
100XX	0.07	0.85	0.45	1.05	0.85	...	101,000	23
100XX	0.07	0.80	...	1.00	2.00	...	103,000	23
110XX	0.07	0.80	1.05	...	1.05	...	117,000	21
120XX	0.08	1.10	0.60	1.55	0.60	0.15	122,000	18
140XX	0.14	1.10	0.95	1.75	0.80	0.20	143,000	9

similar to that of the base metal being welded.

Successful high strength fabrication depends on the prediction and control within narrow limits of the transfer of alloy materials across an arc.

Although alloy elements in low hydrogen electrode coatings are widely publicized, hard surfacing electrodes offer more dramatic illustrations: Twenty to forty per cent of the metal weight of a deposit may be transferred across the arc from the coating.

Table 3 (below) lists the chemical composition of three outstanding examples. In each, the electrode wire is unalloyed mild steel. All the additives in the deposit came from the coating.

Heavy alloying of the weld deposit raises the question of segregation. Laboratory studies and field performance tests have not shown any difference in identical deposits from hard surfacing electrodes and those of coated steel core wire.

Advantages of Coatings — The first is increased flexibility. Deposits aren't limited by the analyses of cast or drawn wire. Improved compositions are not restricted by wire drawing or casting limitations.

The second is improved weld metal properties. Limitations in steelmaking may prohibit minor alterations in the composition of the core wire, forcing the acceptance of a compromise weld deposit. You can usually correct that through the electrode coating.

The work hardening austenitic manganese metal (No. 110XX, Table 2) is an excellent example. Extremely severe root bend tests compare crack sensitivity in weld deposits. Only the most resistant stainless steel electrodes (such as armor welding or Type 312) resist cracking under such conditions. Welds made with many of the 300-series stainless electrodes crack along the entire length of the deposit.

The illustration (page 83) compares crack resistance of a composite nickel-manganese electrode deposit with that of a conventional electrode with an austenitic-manganese alloy core. Weld metal deposited by the composite electrode is appreciably more crack resistant. The difference is related directly to the improved chemical balance and control.

Economic Benefits—It's cheaper to add alloys with the coating than to use an alloy core wire. An example: Composite electrodes with a mild steel core which produce a weld metal composition similar to No. 61, high speed tool steel. Cost is $1 to $1.25 a pound less than coated electrodes with a core of high speed steel.

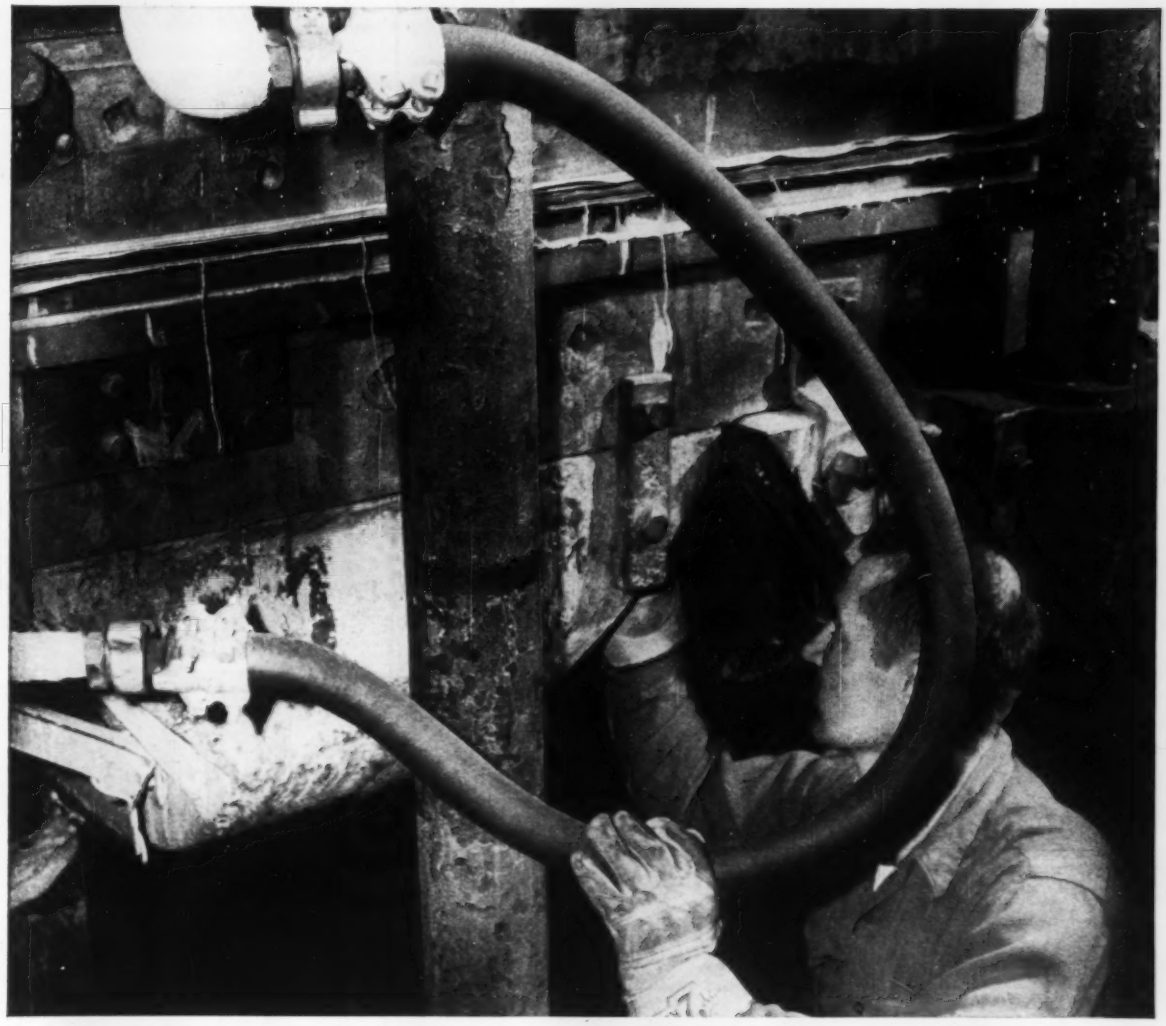
TABLE 3

TYPICAL HARD SURFACING DEPOSITS FROM COMPOSITE ELECTRODES

(Variations are produced entirely by alloying elements in coating)

Alloy	Typical Composition							
	C	Mn	Cr	Ni	Mo	W	Va	Si
H-48	3.55	4.0	30.0		...	...	...	1.0
H-61	0.75	0.5	4.0		8.0	1.2	1.0	0.7
H-118	0.70	14.0	0.5	3.6				0.8

MATCHLESS STEAM HOSE



How to stay alive working next to live steam

Steam—indispensable workhorse in an industrial plant. But if it breaks loose, steam may cause death on contact. Yet this man works with complete security—literally within an inch of his life—because he's working next to the hose that steam cannot burst: wire-braided U.S. Matchless® Steam.

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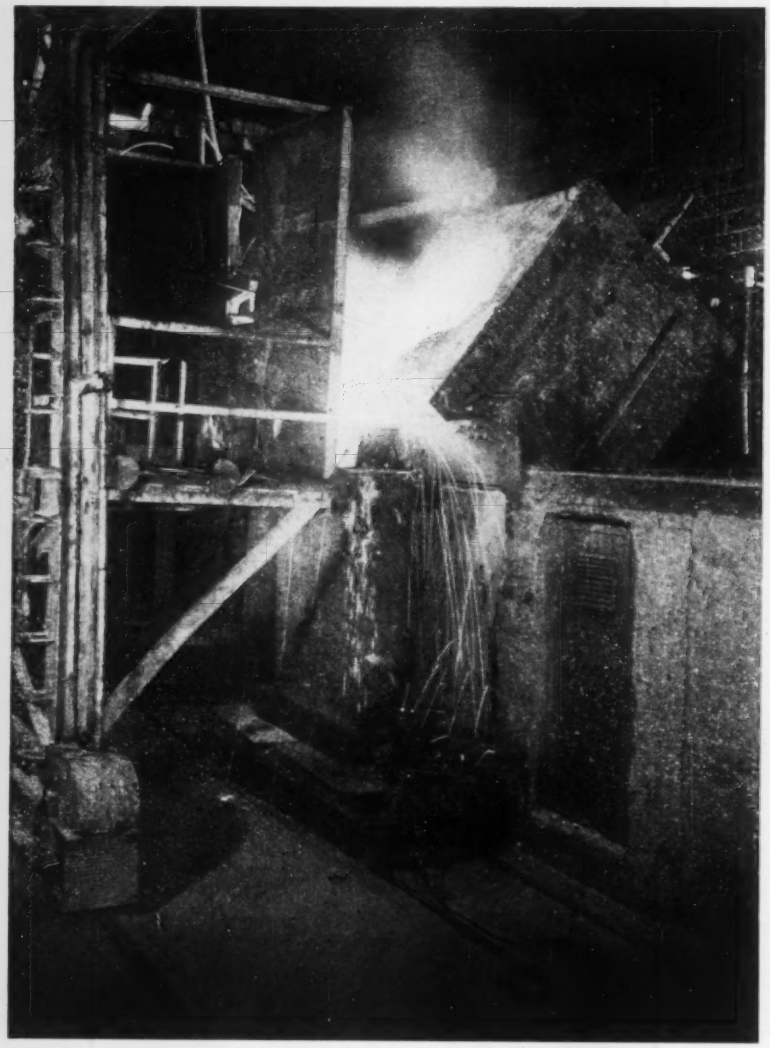

Teeming a heat of titanium bearing stainless at Eastern Stainless Steel Corp., Baltimore. The hot metal flows through a blanket of preheated slag placed in the ingot mold before teeming

Slag Scrubs Stainless

SLAG WASHED stainless steel is being made at Eastern Stainless Steel Corp., Baltimore. The pouring technique was designed to produce steel free from harmful stringer type inclusions, banding, or segregation of titanium.

Slag washing was first successfully applied to one of the more complicated stainless steels, Type 321 (Eastern's 18-10 Ti-SW) after months of testing in Eastern's laboratories and plant. Linde Co., a division of Union Carbide Corp., co-operated in the development.

The technique also has been used in the manufacture of other aircraft types including 19-9DL, A-286 and 19-9DX. Steel for polished stainless sheets in the regular commercial grades can also be produced by this method. The process is particularly valuable in eliminating high scrap loss during fabrication: Sheets and plates can be spun, drawn, machined, and polished without danger of trouble from subsurface inclusions.

Procedure — Eastern's titanium bearing stainless steels are made in induction furnaces. During the melting operation, the metal is in continuous motion. The magnetic stirring results from induction currents. Oxides and other foreign substances float to the top of the bath where they are removed.

After the charge has been melted and its temperature raised for deoxidizing and pouring (2600 to 2800° F), the molten steel is poured directly from the furnace into the mold. It is not transferred to a ladle where refractory particles might be picked up.

Washing—Prior to teeming, a measured amount of a special liquid slag (at 3000° F) is poured into the mold. It is melted in an arc furnace adjoining the metal melting furnace.

As the molten stainless steel flows through the high temperature slag, washing action removes harmful contaminants from the steel. While the steel rises in the mold, the slag forms a protective covering over its surface, preventing air oxidation.

The extremely hot slag also retards the rate of solidification. Low density contaminants that might remain have time to move into the unsolidified metal and float to the top of the ingot where they can be discarded.

The product is a clean steel, free from the nonmetallic inclusions usually associated with titanium bearing stainless steel. It is one of a number of projects on which Eastern's laboratory groups are working.

During 1957, Eastern will add 45,000 net tons to its ingot capacity, approximately doubling its capacity as of the first of the year. Included in new equipment recently added at the Baltimore plant is a 48-in. Sendzimir cold mill. A 30-ton electric furnace and 50-in. skin pass mill were added during 1956.

UNEXCELLED

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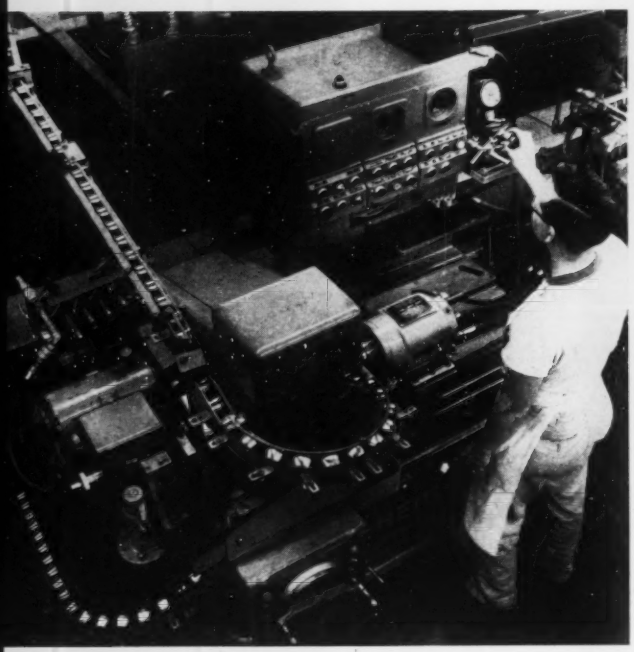
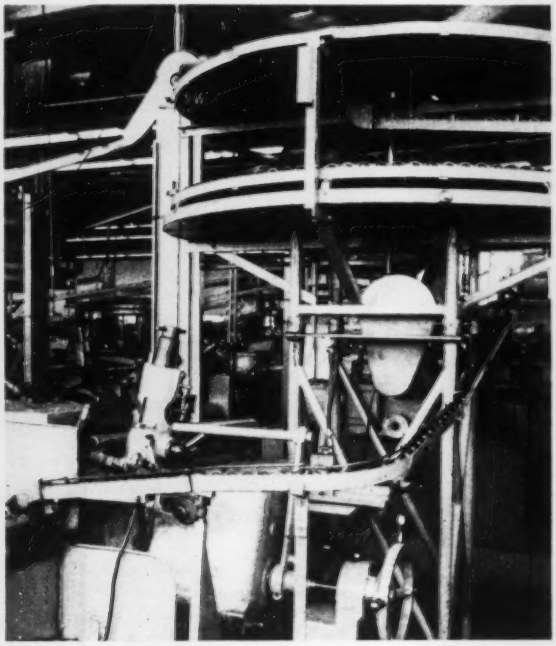


Gravity conveyers feed the Heald 190 Centri-matic grinder. It grinds the ID of the cones to a tolerance of 0.0005 to 0.0008-in. Cycle time: 14 to 25 seconds per cone



Parts feed into this Cincinnati centerless grinder which finish grinds the cups on the OD. The spiral storage rack above the machines assures constant material flow

How Timken Makes Bearings

Special machines and efficient material handling are the keys to high volume manufacturing. Spot inspections after critical operations assure quality control

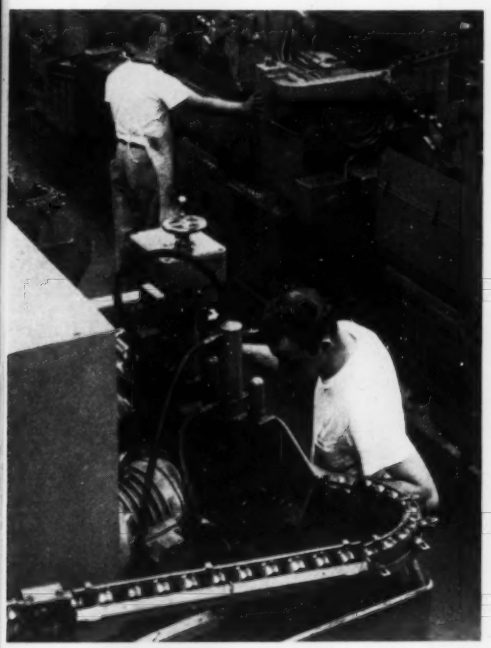
THE high production lines at Timken Roller Bearing Co.'s Bucyrus, Ohio, plant are dramatic proof of what can be done by teaming up conveyerized material handling and special machines.

Eleven lines produce 30 million parts for roller bearings a year at an efficiency estimated to be 4 to 1 better than previous methods. Except for spot checks for tolerances, operators do not touch the parts.

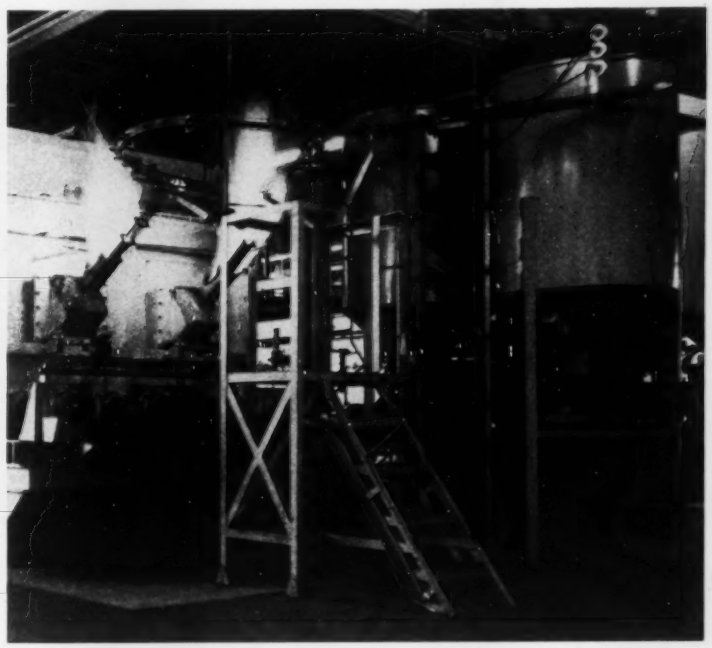
- High production lowers unit cost 15 per cent (each man turns out 192 bearings a shift).
- Smaller machines save plant space.
- Carbide tooling increases machining rates (475 sfpm).
- Material is saved — although only 25 per cent shows up in the final product, the scrap is remelted.
- Downtime is minimized with preset tools, spare machines, and repair carts.
- High quality control is assured by automatic gaging and spot checking.

The $12.5-million plant represents an investment of over $20,000 per man. Employees work on an incentive system which promotes teamwork. They rotate jobs, and after one year each is familiar with all operations along an entire line.

How It Works — Stock racks feed the automatic screw machines. Each machine stops with the loading ram retracted and collet open when it is out of stock. The attendant removes the butt end by pressing an air valve; the loading cradle is opened, a new piece of stock rolls in, the cradle closes, and a ram pushes the tubing into the spindle until it hits the stock stop. The tubing is automatically gripped, and the machine resumes operation.



Throughout the plant a system of conveyers, chutes, and elevators connects the different machine operations



Bearings enter the heat treating furnaces by feeding down the chute from storage bins. The parts are carburized, hardened, and tempered in the furnaces built by Surface Combustion Co.

Feeder tubes place the rollers into the cage. The finished cone assembly is ejected onto a conveyer

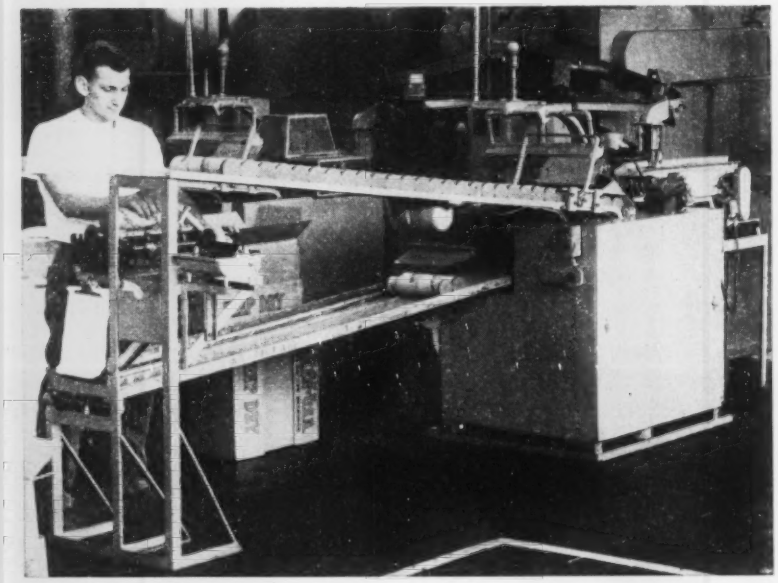
Spot inspections assure that the machines are producing parts within tolerance

Inner and outer race production lines (called cup and cone lines by Timken) are similar, with the material going through green machining, numbering, chamfering, heat treating, grinding, inspection, and packaging. The cups and cones are assembled by hand with the rollers and cages that are made in other Timken plants.

Green Machining — The screw machines use hot-rolled tubing. Special collets make this possible. They have chucking devices using Belleville springs (dished washers) that give a constant pressure over the full range of tube tolerances which may be as much as 0.060 in. on the outside diameter.

The screw machines are designed for the line. The old machines were capable of doing much more than was required of them; the new ones are smaller and will do exactly what is required for making bearings.

Carbide tooling is used for high speed production. It permits speeds that are four times higher and feeds that are two times heav-



After assembly the bearings are automatically packed into cardboard tubes

ler than former tools—an eightfold increase in production capacity.

Design of the tooling has made it possible to save 1/16 in. of tubing for each cup made. The saving is 1 mile of tubing a month.

Carbide tooling is preground and preset in toolholders for installation on all screw machines on scheduled intervals. Tool changes are made from a cart that carries all tools needed for a change. Scheduled tool replacement minimizes offtolerance parts caused by dull tools.

Chips fall into a sluiceway with the coolant. They are separated, and the chips are remelted. The coolant is recirculated. A pickoff device prevents the parts from falling into the sluiceway. It places them on the conveyer system.

Conveyers—Throughout the line the parts are handled by several types of conveyers. They include moving belts, gravity runways, spiral conveyers, and bucket conveyers.

Continuous production is assured by a product banking system at certain points along the line. Two days' storage capacity between green machining and heat treating is necessary since the furnaces operate seven days and the rest of the line works five days a week.

In the finishing department, bearings move in a continuous circle above the machines. As an opening in the machine chute occurs, a bearing part drops into place in the chute.

An interlock system, which operates from a series of limit switches and photoelectric cells, stops the machines when the parts are used up, when the machine is malfunctioning, or when the product is being processed too fast for a subsequent operation.

Heat Treating—After the machining operation, parts are numbered and chamfered prior to heat treating.

The first heat treating process is carburizing. A spiral retort furnace produces a temperature of 1700° F. The cycle requires 5½ to 8 hours and gives a carburized case 0.025 to 0.040 in. Carbon content varies from a 1 per cent maximum at the surface to a core of about 0.20 per cent.

Parts pass from the furnace into a sealed oil quench, through a washer, and into a reheat furnace for case refinement. The reheat furnace has a gas atmosphere and operates at 1510° F. Parts are brought up to temperature and quenched in oil. After being washed, they are tempered at 360 °F.

Grinding—Dimensions are held to tolerances that allow assembly of any cone with standard size rolls. Grinding operations include face grinding, outside diameter and inside diameter grinding, and finish grinding. Two types of machines are used. One is Timken designed and incorporates a magnetic work driver, work supporting shoes, and a hollow or cupped grinding wheel. The second is a conventional Cincinnati Microcentric.

The centerless grinders have a special loading mechanism. Cups fall into the loader from a gravity chute. Each stroke of the loading mechanism places cups in a horizontal column. If the cups are not in a tight column, they may fall sideways, resulting in an offsquare grind. Pressure is applied by a system of weights pushing the column of cups against the grinding wheel. The steady pressure gives a uniform finish on the outside diameter.

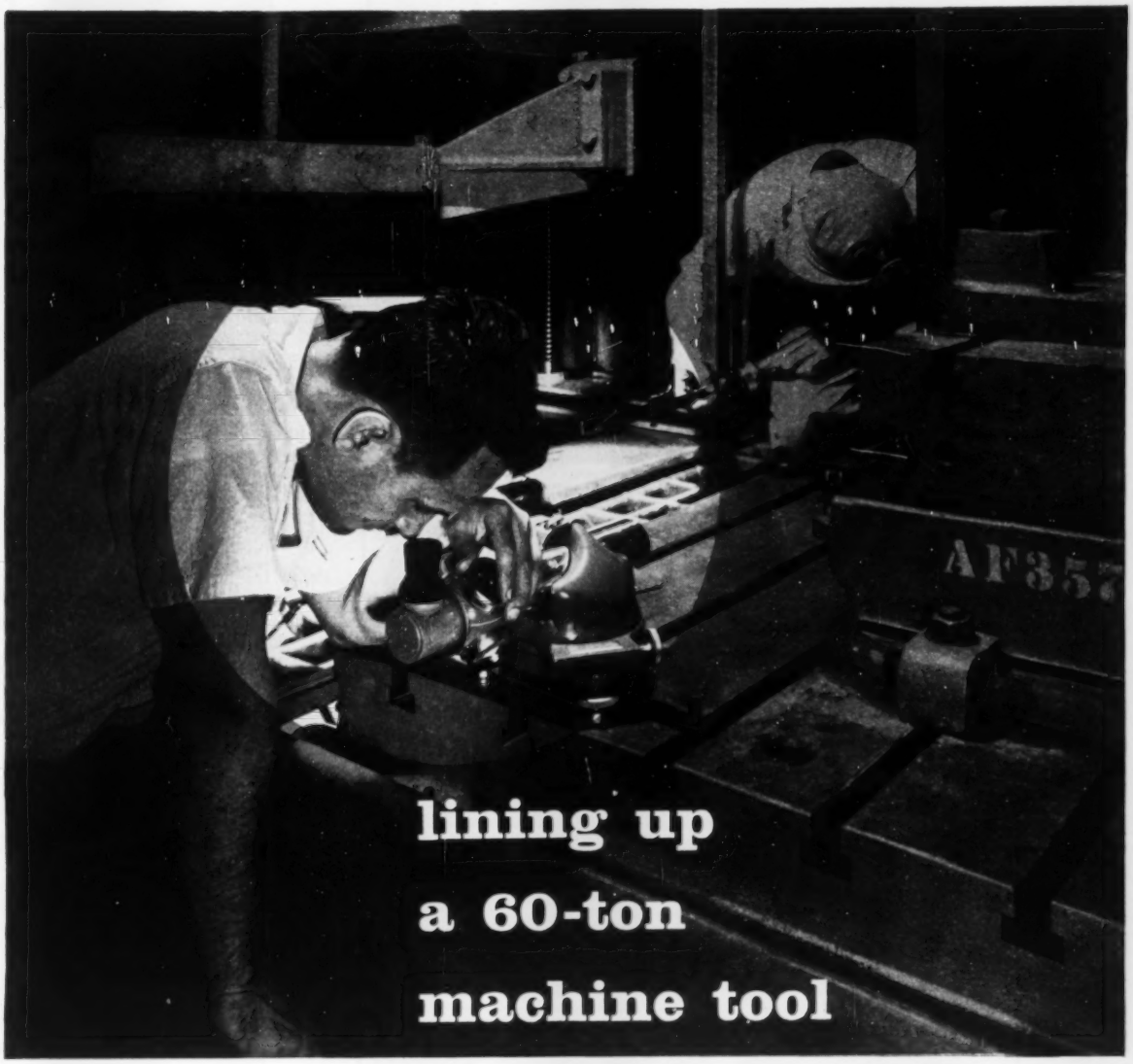
Honing machines use abrasive tape instead of honing stones. The tape is advanced for each cup so that an identical abrasive surface is presented to each cup.

Cups and cones leaving the finishing departments are gaged by Moore automatic gages which simultaneously measure all critical dimensions. Over-all length, outside diameter, taper, and rib length are measured on the cones. The cups are checked for stand, taper, outside diameter, and length. The pieces are also visually inspected. They are wrapped automatically after they are gaged.

Maintenance—A built-in quality control system keeps a close check on the parts. On critical operations, bearings leaving the machines are held in chutes until roving inspectors check the last piece in the chute. If the part checks within tolerance, the work is conveyed to the next operation. It is easy to make effective changes if something is wrong.

The machines are designed for quick removal from the line. Spare equipment can be installed in minimum downtime. Quick couplings are used for accessories such as air, water, and coolant.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*



...BY TELESCOPE!

Precision three-dimensional alignment to 0.001 inch per foot was demanded in installation of eight 60-ton tracer-controlled milling machines at Alcoa's Cleveland plant. This precision had to be achieved in machines mounted on floating foundations.

McGraw mechanical erection specialists licked this problem with the use of specialized optical equipment imported from England — a micro-alignment telescope with auto-collimation. F.H.McGraw & Company is the first construction company to acquire and master these new precision tools.

Whipping tough problems of industrial construction or mechanical erection, within tight time deadlines, is a specialty of McGraw men, machines, methods and materials. A McGraw engineer would be happy to discuss your construction or installation needs with you — no obligation, of course.

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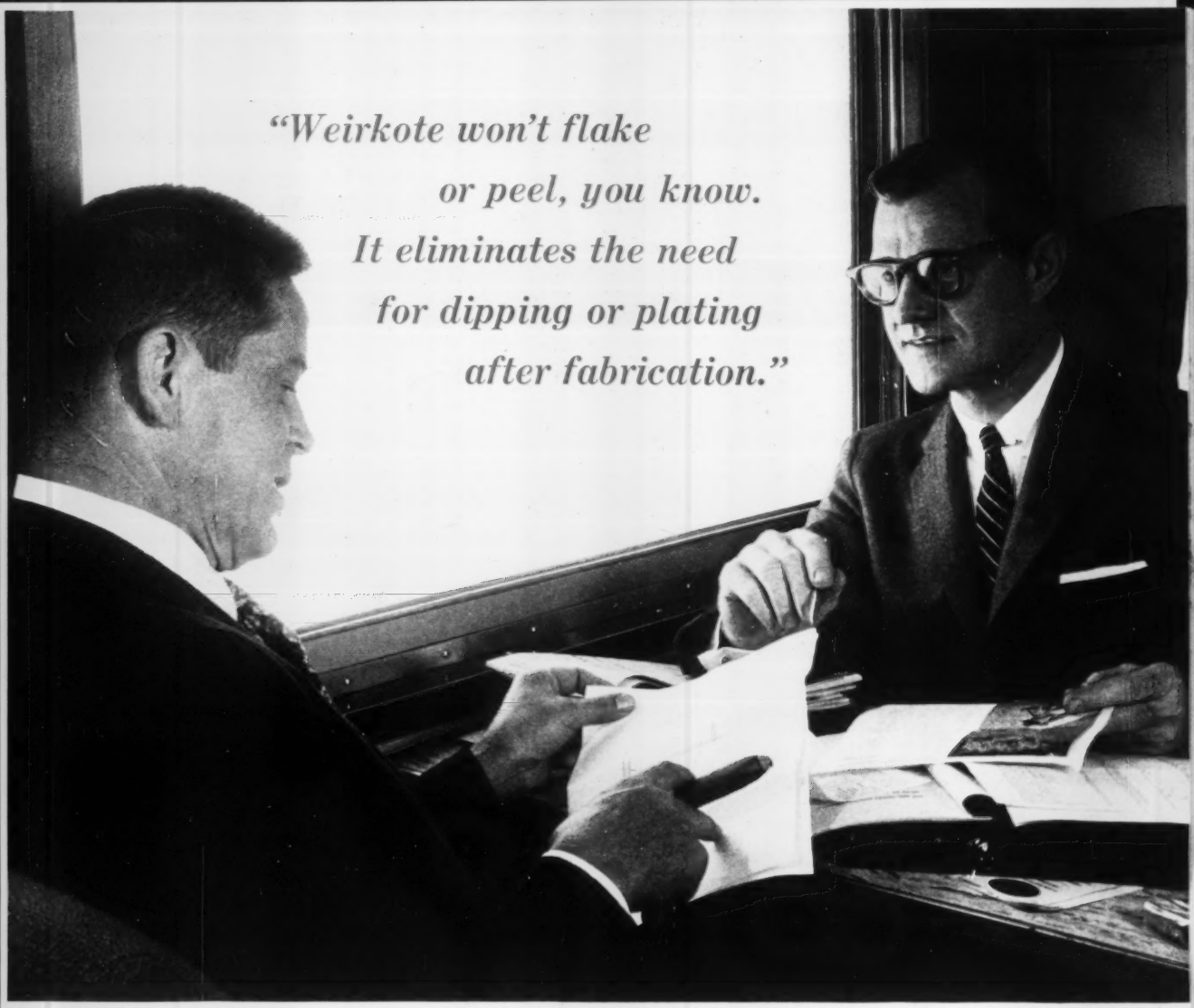


Q.—Weirkote . . . name's familiar. A zinc-coated steel, isn't it?

A.—*Yes, but with a whale of a difference. Weirkote is made by the continuous galvanizing process. Not the old pot-dip way. Its zinc coating is* bonded *skin-tight for keeps. And what an advantage that is!*

Q.—We're using an uncoated steel now, and dipping after fabrication. Even then we have trouble getting a 100 percent coating on some of our more complicated parts. Can Weirkote help us?

A.—*You bet—Weirkote's zinc coating stands up under the worst fabrication beating you'll want to give it. Shoot the works—stamping, punching, deep drawing, bending, twisting. Weirkote stays put. Stays uniform. Just won't flake or peel.*

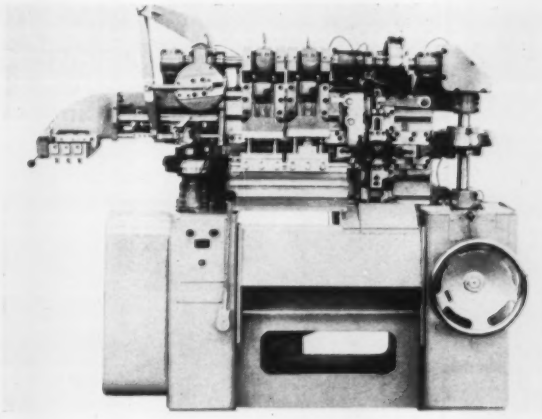
Q.—Sounds like Weirkote may be the answer to a lot of our problems.

A.—*Try Weirkote, by all means. You'll never regret it. Weirkote is one of the shortcuts to economy* and *quality in your business and ours.*

Send today for free booklet that details the time- and cost-saving advantages of using skin-tight zinc-coated Weirkote. Write Weirton Steel Company, Dept. B-2, Weirton, West Virginia.

WEIRTON STEEL COMPANY
WEIRTON, WEST VIRGINIA
a division of
NATIONAL STEEL CORPORATION

Vertical Wire Former Has Four Slides



Setup time and tooling costs are kept low because most operations can be done by a worker standing in front of the machine. Adjustment of the feed stroke, cams, presses, and cutoff are made at the same position.

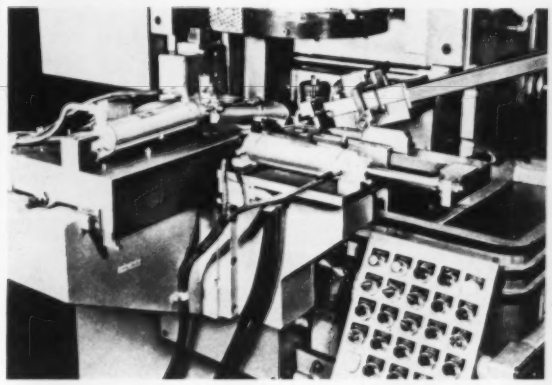
Parts are ejected from the front of the machine. Conveying and handling of secondary operations are easily mechanized.

The center form is mounted in the bed. This provides a strong mounting and a good view of the tooling area.

A large mounting plate makes it possible to fasten large tools securely.

The clutch is between the flywheel and the camshaft system, and the flywheel rotates continuously. *Write*: Torrington Mfg. Co., Torrington, Conn.

Automated Parts Loader Feeds Gear Shaper



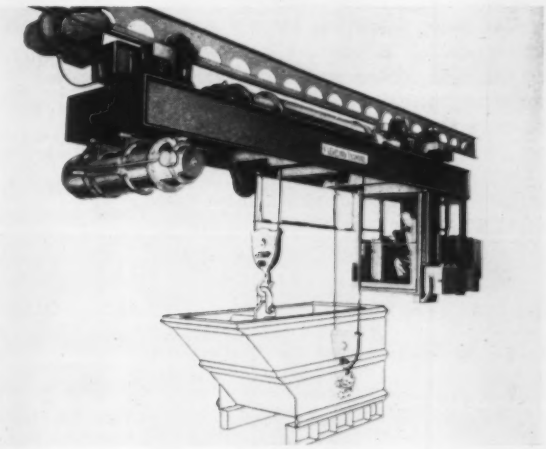
This automated loader feeds parts at any rate up to 100 per cent of the gear shaper's capacity, yet swings clear of the machine so that tool changes can be made easily.

The loader feeds two parts at a time from a two-position index dial (90-degree spacing).

Parts enter the feeder from an entrance chute; one part drops into a recess while mechanical fingers momentarily retain the second part. When released, the second part stacks on top of the first. From this point both parts are transferred to the index dial, indexed, machined, and ejected as a unit.

Pin-locked stops assure positive alignment of the feeder. *Write*: Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich. *Phone*: Twinbrook 1-3111

Tramrail Carrier Controls Dumping of Materials



This twin-hook carrier is controlled from the cab. It uses an auxiliary hoist for dumping.

Weatherproof construction makes it possible to run the carrier outdoors. The unit will pick up tote boxes of material, haul, and empty them by tipping.

While the carrier was designed especially for handling slag in a steel mill, it is suitable for handling a wide variety of materials (castings, bolts, nuts, machined parts, sand, and various bulk materials).

The cab operator controls the hoisting and traveling motions. Only the main hoist is used to raise or lower a tote box in the upright position.

Hoist speed is 35 fpm. Travel speed is 250 fpm. Variable speed drum controllers are provided.

Total capacity is 12,000 lb (6000 lb per hook). Other capacities are available. *Write*: Cleveland Tramrail Div., Cleveland Crane & Engineering Co., E. 289th Street, Wickliffe, Ohio. *Phone*: Whitney 3-3700

NEW PRODUCTS and equipment

Pocket pH Meter

Measurements from 2 to 12 pH can be made with this portable instrument. Lower values can be measured by a simple adjustment.

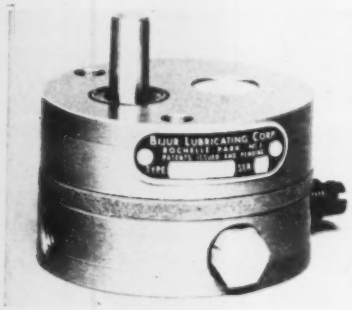
The meter has a combination glass and reference electrode with a 36-in. lead.

Power is supplied by six batteries. The meter weighs 2 lb. *Write*: Scientific Instruments Div., Beckman Instruments Inc., Fullerton, Calif. *Phone*: Lambert 5-8241

Gear Pump

Fluid flow in this sealed pump is always in the same direction regardless of the shaft rotation. It is a reversible pump for recirculation systems and can be mounted on any machine requiring flood lubrication over gear trains, chains, or cams.

The pump is driven from a rotating shaft. A piston-type valve in the base of the pump transfers as the direction of drive reverses, keeping the direction of flow constant by connecting the proper outlet from the pump gears to the pump inlet.



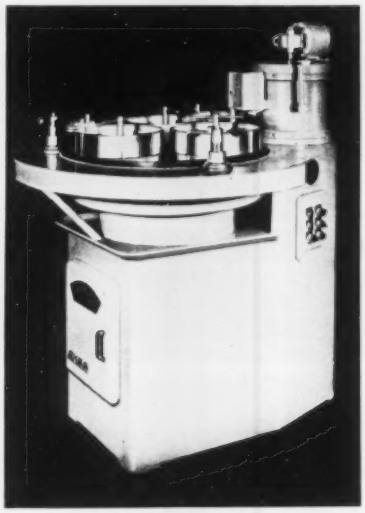
Recommended speed range is 20 to 500 rpm. The pump can operate at a discharge pressure of 150 psi at about 80 per cent efficiency. *Write*: Service, Bijur Lubricating Corp., 151 W. Passaic St., Rochelle Park, N. J.

Flat Lapping Machine

The Gyro-Matic 24 does production line precision lapping and finishing of all types of flat parts. It has three workholder rings which accommodate parts up to 9¾ in. in diameter.

Frictional drive retainer rings retain and guide work while conditioning the lapping plate during the cycle.

An aperture metering disc is used to eliminate the possibility of grit buildup around the abrasive control outlet. The operator adjusts the disc to the outlet size required.



When lapping is completed, parts are slid from the lapping surface to a circular work area. Unloading is done in seconds. *Write*: Spitfire Tool & Machine Co., 2931 N. Pulaski Rd., Chicago 41, Ill. *Phone*: Palisade 5-1610

Recorders

Model 6801, illustrated, is a potentiometer recorder of unitized construction. Readability is increased by straight-time co-ordinates on the 12-in. circular chart.

Model 6702 is a small case unit

which offers up to 12 points on a full size strip chart.

Model 7812 is a mechanical recorder which contains from one to four individual measuring systems and recording pens. *Write*: Weston Electrical Instrument Corp., Newark, N. J. *Phone*: Bigelow 3-4700

Welding Flux

Flux No. 2 is for general brazing, cast iron welding, and cast iron brazing with the oxyacetylene process.

The flux provides dense, sound deposits and is easily removed. Wetability is excellent, and strong joints are provided by the flux's deep penetration.

It is nonfuming and nontoxic, protects against excessive oxidation, and dissolves and removes oxides formed.

The flux depresses filler metal bubbling and fuming. *Write*: Ampco Metal Inc., 1745 S. 38th St., Milwaukee 46, Wis. *Phone*: Mitchell 5-3750

Frame Drilling

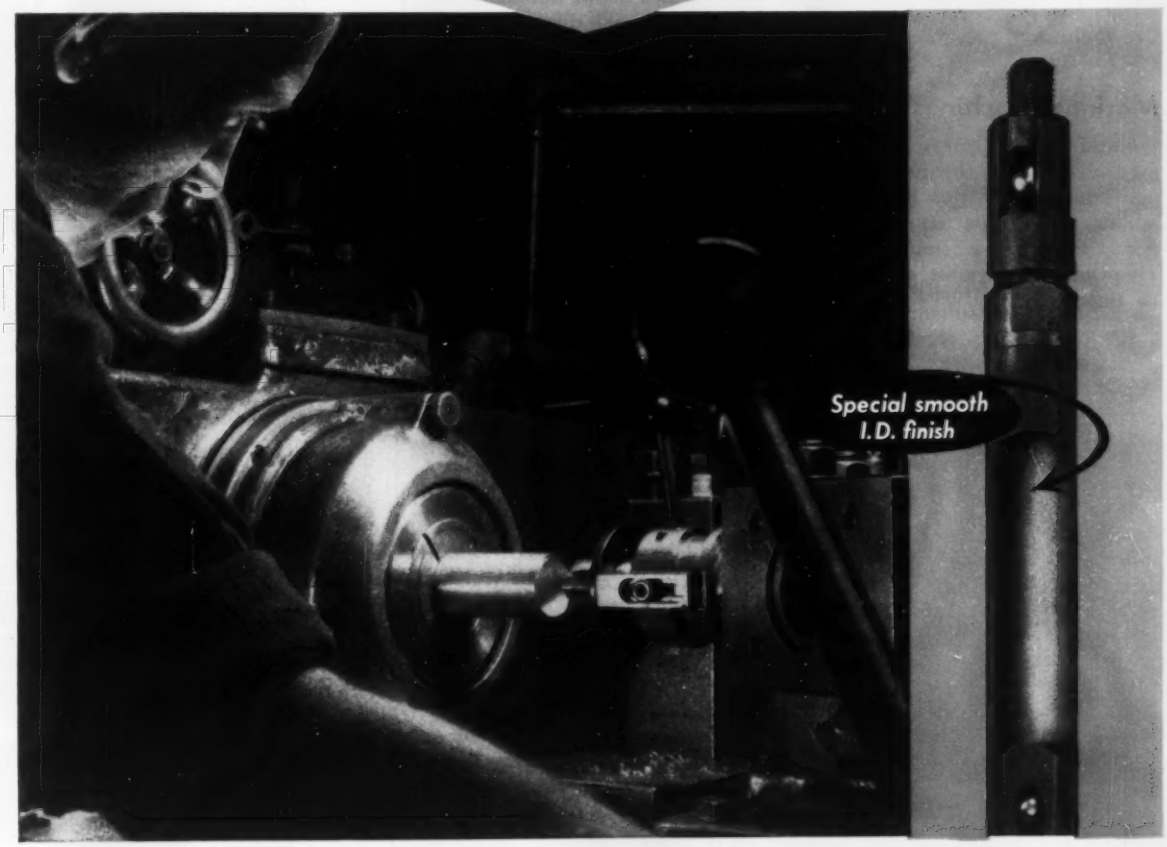
This three-way machine drills the front section of auto frame assemblies.

The machine has a special horizontal unit with three heads. The outside heads have two stub spindles, each pointing toward the center.

The center head has two stub spindles on each side pointing toward the outside heads.

All heads have a common mounting and move together, first in one direction to drill the cross members from one side, then in the opposite

This pump manufacturer reports 25% savings with J&L COLD DRAWN ELECTRICWELD TUBING



Operator is threading 1¾" O.D. x 1½" I.D. J&L special smooth *cold drawn* Electricweld tubing for pump cylinder.

Low original cost and elimination of interior honing are two reasons why it pays you to specify J&L *cold drawn* Electricweld tubing with special smooth I.D. finish.

This manufacturer of oil well insert pumps reports a saving of 25% by converting from honed seamless tubing to *cold drawn* special smooth I.D. Electricweld tubing. Not a single tube failure has been reported from the field.

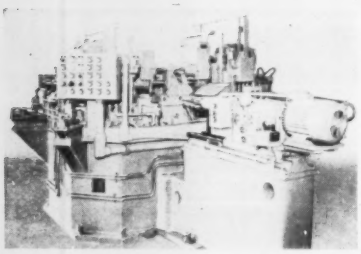
Because of its superior inside surface finish, exact tolerances and closely controlled physical characteristics, J&L *cold drawn* Electricweld tubing is recommended for these applications:

- *cylinder tubing* • *shock absorbers*
- *ordnance parts* • *hydraulic and pressure tubing*

J&L *cold drawn* Electricweld tubing is readily available in diameters from ¾" O.D. to 4¼" O.D., 8 gage to 20 gage, and can be furnished to closer than commercial tolerances. Write to Jones & Laughlin, 3 Gateway Center, Pittsburgh 30, Pa.

Jones & Laughlin
STEEL ... a great name in steel

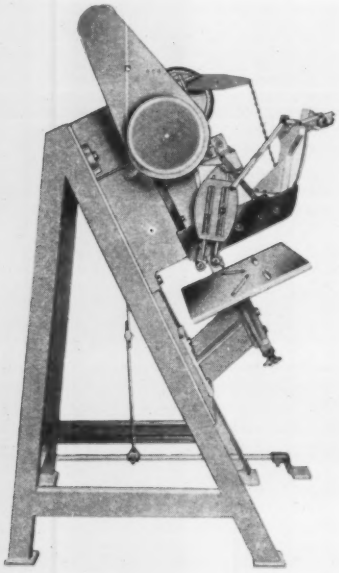
NEW PRODUCTS and equipment



direction for the opposite holes. *Write*: National Automatic Tool Co., Richmond, Ind. *Phone*: 2-1183

Marking Machines

Metal panels, abrasive wheels, appliances, and cartons can be marked at rates from 30 to 60 a minute. Maximum imprint size is 9 x 11 in. Either a complete legend (imprint) or variable details can be imprinted.



Model 103A is used for flat object marking. Model 103AE will imprint recessed areas to a depth of 1¼ in. below the top surface of the piece. *Write*: Markem Machine Co., Keene 70, N. H. *Phone*: Elmwood 2-1130

Jig Borer

The Hydroptic 6A is a jig boring and milling machine. It has an enclosed optical measuring system (English units) and is calibrated at a standard temperature of 68° F.

The minute graduations on the standard scales are magnified and viewed on built-in projection screens having micrometer drums with vernier readings to 0.0001 in.

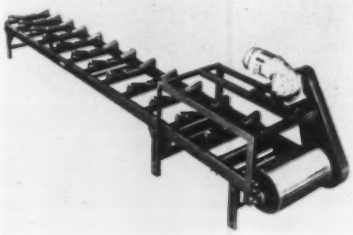
Vertical travel of the crossrail is motorized; a 1.3 hp motor drives the lead screws through worm wheels. The crossrail provides a rigid support for the spindle head saddle along its horizontal guideways.

The saddle is traversed by a motor which allows automatic milling feeds in each direction.

There are 18 spindle speeds from 40 to 2000 rpm. *Write*: American Sip Corp., 100 E. 42nd St., New York 17, N. Y. *Phone*: Oxford 7-0865

Troughing Conveyer

This power driven conveyer uses rubber, Neoprene, or canvas belts.



The drive is mounted above the conveyer.

The roller is 2 in. in diameter. It has a ball bearing equipped with a Neoprene seal and is grease packed.

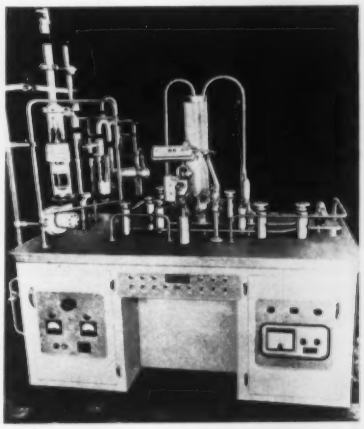
The conveyers come in 18 and 24 in. widths. *Write*: Sage Equipment Co. Inc., 30 Essex St., Buffalo 13, N. Y. *Phone*: Elmwood 5242

Gas Analyzer

Traces of hydrogen, oxygen, and nitrogen in metals are measured by the Serfass gas analyzer. It is also used to analyze transistor materials.

The analyzer can be set up on the floor of a mill to follow the progress of each heat.

A vacuum fusion analysis takes 10 to 20 min. With metals (such as manganese) which may distill at fusion temperatures, a hot extraction unit removes the hydrogen at red heat.



The unit can be used for vacuum fusion and extraction. Hydrogen concentrations from 2000 to 0.1 part per million can be handled. *Write*: Fisher Scientific Co., 420 Fisher Bldg., Pittsburgh 19, Pa. *Phone*: Express 1-1330

Inspection Bench

This portable bench moves the gages to the job. A foot brake locks the bench to the floor.

The work area is covered with a shock absorbing vinyl plastic cover to provide a surface for gage inspection.

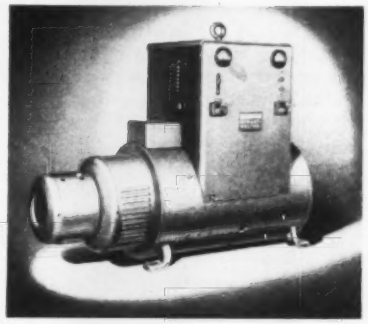
A retractable extension cord (50 ft) is used to supply power to the four outlet plugs which accommodate electric comparators, monochromatic lights, visual gages,

or other electric instruments. *Write*: Wright Tool Co., 4316 N. Woodward Ave., Royal Oak, Mich. *Phone*: Liberty 9-3990

Carbon-Air Cutting

This Carbonaire supplies power for carbon arc and compressed air cutting and gouging of metals.

The machine is rated at 1200 amperes on 100 per cent duty cycle and has a maximum output

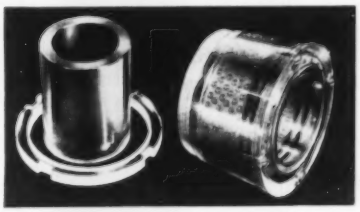


of 1600 amperes. It uses carbon electrodes over ½ in. in diameter.

A single rheostat gives a wide range of voltage control. *Write*: Hobart Bros. Co., Hobart Square, Troy, Ohio. *Phone*: Federal 2-1223

Arbor Bearings

This plastic model illustrates the features of a standard line of arbor support bearings for milling machines. The use of many balls provides a large bearing contact area and high load capacity.

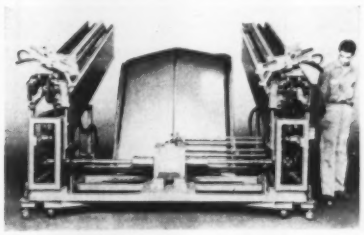


Arbor bearing collars are available for each standard bearing.

The bearing is seated completely within the arbor support housing. *Write*: Briney Mfg. Co., P.O. Box 2208, Pontiac, Mich. *Phone*: Federal 4-2552

Stamping Unloader

Large stampings are handled by the Dual-Jaw automatic unloader. The portable automation unit has two standard mechanical jaw assemblies mounted on individual carriages. The carriages are moved by a reversible air motor through a roller chain drive.



The jaw assemblies are mounted on the carriages at a 45-degree angle so that they automatically clear the stamping when it is unloaded from the press. The unloader unit can be adjusted to handle a wide variety of parts. The jaw assemblies swivel in any plane. Carriage slides have both vertical and angular adjustment.

The unloader operates on 20 to 45 psi air line pressure, depending on the carriage slide angle setting. *Write*: Press Automation Systems Inc., 25418 Ryan Rd., Centerline, Mich. *Phone*: Slocum 8-6940

Coolant Filtration

The Delpark vacuum filter is used for the filtration of grinding coolants and cutting oils. It will handle flow rates of 1000 gpm of water.

Filtering is done by tubular screen elements manifolded into a suction header box in which a vacuum equivalent to 18 in. of mercury is maintained.

The unit cleans itself automatically by reversing the coolant flow through the manifold into the tubes.

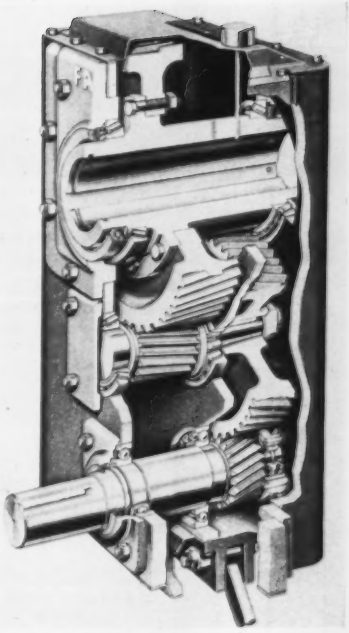
Sediment from the screens is removed by chain-driven flights which deposit the sludge in a tote box for disposal. The flow of coolant to and from the filter is not interrupted during the cleaning cycle.

Filter aids may be used for precoating the screens when absolute filtration is required. *Write*: Dept. FMH-297, Industrial Filtration Co., Lebanon, Ind.

Shaft Mounted Drive

The 315J drive is available in a single reduction ratio of 5:1 and in two double reduction ratios of 14:1 and 25:1. Unit ratings range from 2 hp at 5 rpm to 50 hp at 350 rpm. Maximum torque rating at low speed shaft is 31,000 lb-in.

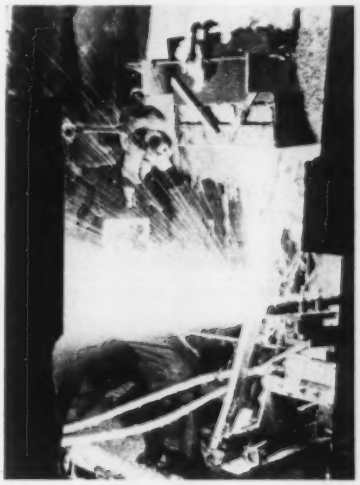
A long center distance between shafts permits the use of large sheaves on installations where the unit is mounted with the input



shaft toward the driven machine or on through-shaft applications. *Write*: Dept. 255, Falk Corp., 3001 W. Canal St., Milwaukee 1, Wis. *Phone*: Division 2-3131

Optical Pyrometers

Temperatures up to 7600° F can be measured by the 8626-C pyrometer. Applications include measurements involving solar and vacuum melting furnaces, the making of cermets, and tests of jet engine parts.



The pyrometer is sparkproof and dust-tight. *Write*: Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa. *Phone*: Davenport 9-4900

NEW literature

Write directly to the company for a copy

Flexible Cushion Coupling

Bulletin A669, 12 pages, tells how a coupling with a rubber tire element accommodates angular misalignment, parallel misalignment, and end float in addition to cushioning shock loads and diminishing torsional vibration. Engineering data tables help in the selection of couplings. Dodge Mfg. Corp., Mishawaka, Ind.

Welding Blowpipe

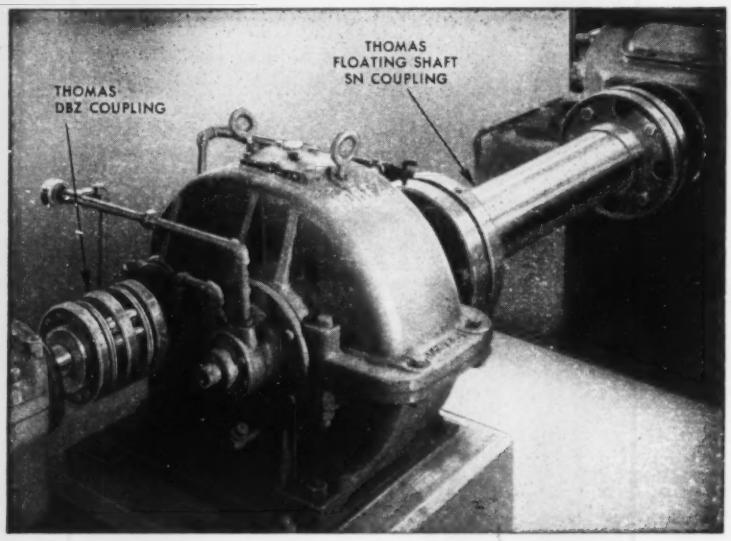
Bulletin 1107, 8 pages, describes a blowpipe that can weld any metal from 28 gage sheet to 3 in. plate. Information on welding heads and cutting nozzles is included. Linde Co., division of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.

Eye Bender

Capabilities of a machine for the production bending of round or oval eyes, hooks, or right angle bends are described in this 2-page bulletin, 75-1. Hydraulic presses are covered in an 8-page bulletin, 76. Williams-White & Co., Moline, Ill.

THOMAS FLEXIBLE COUPLINGS

Give You Freedom From Coupling Maintenance



NO LUBRICATION NO MAINTENANCE NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

Properly installed and operated within rated conditions, Thomas Couplings should last a lifetime.

Under Load and Misalignment only Thomas Flexible Couplings offer all these advantages:

1 Freedom from Backlash Torsional Rigidity
2 Free End Float
3 Smooth Continuous Drive with Constant Rotational Velocity
4 Visual Inspection While in Operation
5 Original Balance for Life
6 No Lubrication
7 No Wearing Parts
8 No Maintenance

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

Cutting Tool Units

Catalog 57, 50 pages, describes a precision cutting tool for boring, turning, and other cutting operations. Specifications are given for 26 sizes, plus boring bars used with the tools. Beaver Tool & Engineering Corp., 500 W. County Rd., Gaylord, Mich.

Hard-Facing Electrodes

This 8-page bulletin describes chemical composition, properties, and uses of eight iron base alloys, three cobalt base alloys, and cast tungsten carbide. Literature Distribution Section, Haynes Stellite Co., division of Union Carbide Corp., 30-20 Thompson Ave., Long Island City 1, N. Y.

Power Spinning Lathe

This 4-page bulletin describes a lathe for the rotary forming of round, hollow workpieces. Kurt Orban Co. Inc., 34 Exchange Place, Jersey City 2, N. J.

Electrode Guide

Catalog 1318, 70 pages, describes each electrode, its color code, its application, and the best procedure for its use. Weld metal chemical analyses and mechanical properties are covered. Also discussed: Electrode selection, industrial and government specifications for filler metals, and testing of deposited weld metal. An electrode consumption calculator provides data for calculating consumption per linear foot in welding various types of joints. Air Reduction Sales Co., division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y.

Pipe Cutting

This 8-page bulletin describes a dry abrasive cutting machine which handles pipe, tubing, angles, channels, special sections, and smaller sizes of bar stock. Wallace Supplies Mfg. Co., 1300 Diversey Parkway, Chicago 14, Ill.

Chains

This chart illustrates the 12 types of chain and the tradename designations of the manufacturers. Complete listings of specifications cover aluminum and stainless steel. McKay Co., 330 McKay Bldg., Pittsburgh 22, Pa.

Welding

Bulletin TIS 2836A, 8 pages, presents time and money saving techniques for production and maintenance welding. Included: How to

weld crack sensitive and heat treatable steel, how to fill, seal, and build up heat sensitive cast iron alloys, and directions for aluminum and magnesium joining. Technical Information Service, Eutectic Welding Alloys Corp., Flushing 58, N. Y.

Hot Extrusion

This 12-page bulletin describes tool steels for the hot extrusion process. Engineering Service Dept., Crucible Steel Co. of America, P.O. Box 2518, Pittsburgh 30, Pa.

Induction Heaters

Billet heaters for aluminum, copper, brass, and steel are described in this 8-page bulletin. Advantages of 60-cycle induction heating of copper and brass are shown, and 60-cycle steel billet heating installations for extrusion, forging, and stage heating are described. Magnethermic Corp., 3990 Simon Rd., Youngstown, Ohio.

Structural Steels

This 20-page bulletin describes the characteristics and uses of steels with minimum yield strengths from 55,000 to 150,000 psi. Composition, mechanical properties, heat treatment, corrosion resistance, and machinability of 15 grades of steel are tabulated. Metallurgical Development Div., Climax Molybdenum Co., 500 Fifth Ave., New York 36, N. Y.

NEW BOOKS

Fatigue Durability of Carburized Steel, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. 123 pages, $4.

The effect of surface condition of the fatigue resistance of hardened steel, residual stresses, and fatigue durability are discussed in this material, presented by members of General Motors Corp.'s research staff at the 38th National Metal Congress.

Fundamentals of Mechanical Design, Richard M. Phelan, McGraw-Hill Book Co. Inc., 330 W. 42nd St., New York 36, N. Y. 526 pages, $8.75.

This textbook integrates the important concepts normally covered in the design sequence for mechanical engineers. It describes what can be done and principles involved. It also tells where one can find detailed information that may be required in the design or selection of mechanical elements or machines.

On which of these can you use help?	OK here	Can use help
PRODUCT DESIGN & DEVELOPMENT		
MANUFACTURING COST ANALYSIS		
PRODUCTION PROCESSING		
TOOL & DIE DESIGN		
MACHINE DESIGN		
TIME STUDIES AND ANALYSIS		
AUTOMATION DEVELOPMENT		
PLANT LAYOUT & SPECIFICATIONS		
PRODUCTION & QUALITY CONTROL		

Handy Check List for Executives and Chief Engineers

If you have a single check in the "can use help" column, you need the services of Pioneer Engineering & Mfg. Co. Our complete, contract engineering services are available when and where you need them. For more information, contact our chief engineer. He'll see that you get it immediately.

SINCE 1931 Pioneer ENGINEERING & MANUFACTURING CO., INC.
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INDUSTRIAL ENGINEERS, CONSULTANTS & DESIGNERS
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STEEL MEN!

FIGURE THE VALUE OF A BALANCED TANK

THE ideal glass furnace is one which can be counted on to wear out evenly and uniformly, giving the operator the *full* potential value of every brick in every part of the tank.

Until a few years ago, however, such a tank was considered an obvious impossibility.

When Corhart Electrocast was first offered to the trade as a much superior glasshouse refractory, our new customers began using it to strengthen those portions of their furnaces which had always been the limiting factors in producing life.

This idea proved successful, but at the end of the fire, the Corhart was usually in such good shape that the natural result was to fortify the next weakest portions. This step-by-step process has now been followed through to its logical conclusion by most of our original customers: namely, the gradual increase of Corhart to a point where the life of the former weak portions approximates the life of the easy-service portions. This ideal construction, with the judicious use of Corhart Electrocast, has led to what is termed "The Corhart Balanced Unit."

A Corhart Balanced Unit can be fabricated for a surprisingly small percentage increase in first cost. *This percentage increase represents only a fraction of the increased life and total tonnage output.*

Corhart Balanced Tanks are now widely used throughout the industry. *More than sixty are now in service*—and this, of course, is in addition to the dozens of installations in which Corhart is used as a spot refractory. Write us today for the complete facts and figures on a Corhart Balanced Tank of *your* company's type. Full designs, specifications and quotations will be gladly furnished, without obligation. *Address:* Corhart Refractories Co., *Incorporated*, 16th & Lee Sts., Louisville, Ky.

QUALITY ECONOMY ENDURANCE

CORHART ELECTROCAST REFRACTORIES

THIS ad appeared more than 25 years ago—in January, 1932. At that time Corhart Electrocast was still so new in the glass industry that only a few of the most progressive companies dared buy it. It was, *and still is*, "one of the world's highest-priced refractories". Yet now its use is practically universal . . .

Today Corhart 104 is new in the steel industry. Like its glass-industry counterpart, it too is "one of the world's highest-priced refractories". Yet it offers open-hearth furnace operators the same opportunities for greater production and lower costs that Corhart Electrocast brought to the glass industry.

May we send you all the facts? Address: Corhart Refractories Co., *Incorporated*, 1624 West Lee Street, Louisville 10, Kentucky, U.S.A., SPring 8-4471.

QUALITY ECONOMY ENDURANCE

CORHART 104 ELECTROCAST REFRACTORY

The words "Corhart" and "Electrocast" are registered Trade Marks which indicate manufacture by Corhart Refractories Company, *Incorporated*. Corhart Refractories Co., *Incorporated*, 1600 West Lee Street, Louisville 10, Kentucky, U.S.A.—Telephone SPring 8-4471.

Market Outlook

STEEL PRODUCTION set a record in the first nine months of this year, but output will have to boom in the last quarter if the year is to be a record one.

Helping to bolster the figure for the first nine months were high production in the early part of the year and sustained production at midsummer. Summer operations are often marred by a steel strike.

THE RECORD—In setting a nine months' record, the steel industry produced 87.6 million net tons of steel for ingots and castings. The previous high for this period was 85.8 million tons in 1955. Last year, the outturn was 82.8 million tons.

September production was about 8,980,000 tons. This fell short of the September record of 10,422,659 tons chalked up in 1956.

CHALLENGE—Production this year will equal the record 117 million tons made in 1955, if output averages 88 per cent of capacity in the final quarter. The industry will have to make 29.4 million tons of steel for ingots and castings in that period, or an average of 9.8 million tons in each of the final three months. Output has not been this high since last April.

Currently, output is running at 82 per cent of capacity (in the week ended Sept. 29). The preceding week's rate was 81.

INFLUENCES—Holding down steel production is the users' knowledge that they can get what they want when they want it. This has influenced them to reduce their inventories of raw materials and processed goods. Consumers have been using more steel than they are buying, living to a considerable extent on their inventories. This holds down steel production.

Indicative of the current policy of keeping inventories low, one of the automobile producers has put most of its purchasing funds in short term government securities. Even with the inventory reduction pretty well achieved, the auto industry is not ordering as much tonnage as steel companies had anticipated. They are being disappointed by other consuming groups, too.

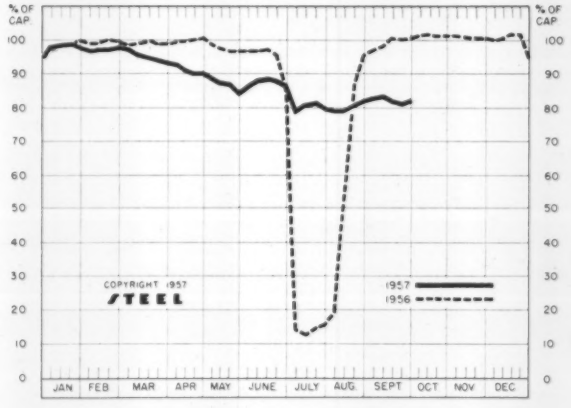
WANTED: ORDERS—Bookings for October delivery have been pretty good, but there still is a lot of room on the November and December books. Automakers want to see how the 1958 models sell before ordering much steel.

EXCEPTIONS—About the only forms of steel that you can't get immediately are plate mill plates, wide flange beams, large line pipe.

To get into a position to make prompt delivery on the other forms of steel, producers have built up stocks of semifinished.

PRICE TRENDS—The slowed pace in steel buying and production continues to cut scrap prices. In the week ended Sept. 25, STEEL's price composite on steelmaking grades slid to $46.33 a gross ton, lowest level since mid-May and $1.84 below the preceding week. Other price movements were mixed. Standard ferromanganese, a raw material for the steel industry and foundries, went down $10 a ton, while some chromium and silicon alloys rose. High carbon ferrochrome went up $20 a ton of contained chromium; low carbon ferrochrome climbed $40 per ton of chromium; and ferrosilicon advanced $24 per ton of contained silicon.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Sept. 29	Change	Same Week 1956	Same Week 1955
Pittsburgh	82	+ 1*	101.5	100
Chicago	85	+ 1.5*	101.5	97
Mid-Atlantic	86	— 1	99.5	94
Youngstown	77	— 2	102	100
Wheeling	94	+ 0.5	101	97.5
Cleveland	85.5	— 2*	106	99.5
Buffalo	100	0	107.5	105
Birmingham	72.5	— 4	97.5	95.5
New England	50	— 2	91	88
Cincinnati	82	0*	86	87
St. Louis	77	— 6	96.5	88.5
Detroit	96	+ 1*	98	98.5
Western	94	— 1	99	98
National Rate	82	+ 1	100.5	96

INGOT PRODUCTION‡

	Week Ended Sept. 29	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	131.5†	130.8	130.9	155.8
NET TONS (In thousands)	2,112†	2,101	2,103	2,502

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.

Metalworking Outlook—Page 39

Technical Outlook—Page 77

How to get rid of arthritis and find good Plant Sites

A centipede with arthritis sought the advice of a wise old owl. "Centipede," the Owl said, "you got a hundred legs, all swolled up with arthritis. Now if I was you, I'd change myself into a stork. With only two legs, you'll cut your pain 98%, and if you use your wings you can stay off your legs."

The centipede was elated. "I accept your suggestions without hesitation, Owl," he said. "Now, just tell me, specifically how do I go about making this change?"

"Oh," said the owl, "I wouldn't know about the details. I'm in general policy."

If your company is looking for a good location for a new plant, you already know what the "general policy" is. What you want now is the details. You know what you want — now you want to know how to go about finding it with as little waste motion as possible.

That's where the Norfolk and Western can help you. There are good plant sites in *The Land of Plenty* — and N&W plant location specialists know where they are and exactly what they offer. With long experience in helping manufacturers locate plants efficiently, they understand your problems. All they need to know is your specific requirements, and you can give them this information with the assurance it will be held confidential. They will work for and with you, without obligation. Now that you know the "general policy", let them give you the details.

Write, wire or call—

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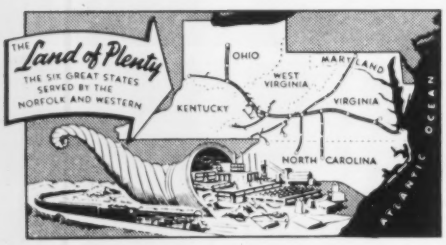
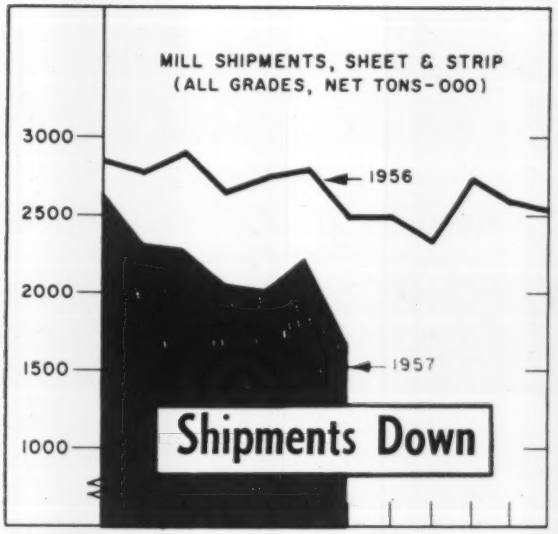
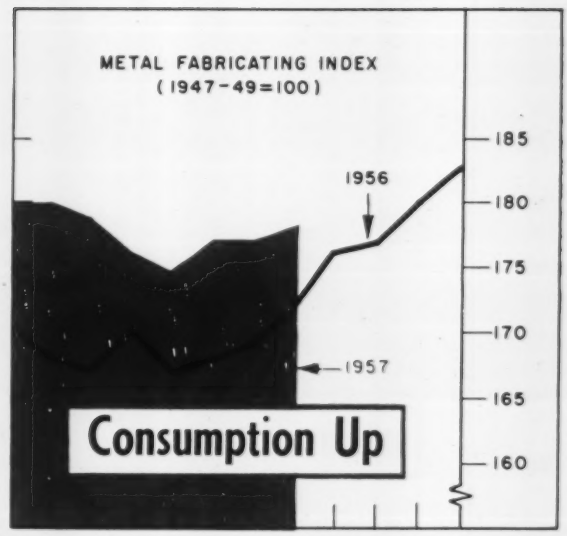
Industrial and Agricultural Department
Drawer S-777 (Phone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia



Norfolk and Western RAILWAY



American Iron & Steel Institute.



Federal Reserve Board.

Sheet Buyers Cautious

So anticipated fourth quarter upsurge is developing slowly. Steelmakers are banking on drastic reduction in consumer inventories to stimulate orders

"I WOULDN'T SAY we are pessimistic, but we are more cautious in our planning for the fourth quarter," says the vice president-sales of a midwestern steel company in talking about sales prospects for sheets and strip. He and a large part of the industry are disappointed because the sheet market isn't showing the marked fourth quarter upturn anticipated only a month or two ago.

It is still too early to write off fourth quarter as a bust because there are signs that it will eventually become pretty active. A few steelmakers report that October bookings are satisfactory. One Chicago mill is booked to capacity for sheets, and demand looks good enough to keep operations at a comfortable level through November and December. From Philadelphia comes the report that except for aluminized, oriented electrical, and a few flat-rolled specialties, sheet bookings for October are continuing at a good level. On the West Coast, demand from Los Angeles area auto assembly plants is sustaining the sheet market; orders are on the upgrade.

Inventory Puzzle—But scattered reports cannot cover up the concern of many producers over the lack of zip in sheet buying, particularly from the auto industry. It takes 35 to 40 per cent of all sheet and strip products shipped from the mills. During calendar 1957, it has been operating about 3 or 4 per cent above year-ago levels. Yet its purchases of flat-rolled products have been significantly below the 1956 pace, the reason steel officials have been optimistic about the fourth quarter.

The charts above indicate that some break is bound to come before long. While total sheet and strip shipments have been considerably below year-ago levels through July, metal fabricators have maintained output well above the 1956 pace. This period of inventory reduction dates back to late 1956, and most observers are convinced that consumers' stocks are at or near the danger point.

For instance, one of the Big Three auto producers is reportedly down to less than a three days' supply of sheets. Its plants are literally living off receipts. The report states that this producer has no intention of building up huge inventories. It prefers to invest its funds in short term government securities (interest on 60 to 90-day notes is now running between 3 and 4 per cent) rather than tie them up in inventory.

A Trend?—It is believed that ordering will be hand to mouth as long as consumers are assured of prompt delivery. One Pittsburgh steelmaker believes that the 45-day leadtime in ordering sheets is a thing of the past. Another industry official observes that only 80 per cent of sheet capacity today would produce as much as 96 per cent did four years ago. Another states that even if automen upped their sights for 1958 by 200,000 to 300,000 units, the steel industry could still maintain minimum delivery time. "Only if they suddenly start producing at an annual rate of about 8 million cars would we be hard pressed to make delivery," he adds.

Most producers agree that even though orders are not up to snuff,

there has been a slight improvement in October bookings. They anticipate that as new model production builds up, so will orders for sheets and strip. One Pittsburgh producer says the steel industry probably will "hold an umbrella" over the automakers for the first two or three weeks in October—setting aside tonnage for them for November delivery. If motordom doesn't come in with large enough orders by then to cover that tonnage, producers will sell where they can.

Appliances Spotty—One possible outlet is in the appliance industry, although the picture there is almost as spotty as it is in the auto industry. One producer says that his own order books indicate that over-all tonnage to appliance makers is edging up, but not all customers are participating in the trend. A Pittsburgh producer says this is the only really weak part of the sheet market. Much depends on the particular manufacturer involved. Two major producers of appliances are in a slump. But Frigidaire Div., General Motors Corp., is recalling workers laid off this summer.

The steel industry is still anticipating a good fourth quarter despite this apparent weakness in one of its biggest markets. There is still plenty of room on the books for November and December, and several producers are warning customers that they had better order now if they want guaranteed delivery then.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 113

Operations at reinforcing bar mills in the Pacific Northwest are unchanged. Order backlogs are slipping, but considerable new work is scheduled to be up for bids in the immediate future. A fair volume of new business is being booked in small orders (less than 100 tons each). Weather conditions remain favorable for outdoor construction.

Tool Steel . . .

Tool Steel Prices, Page 117

Crucible Steel Co. of America, Pittsburgh, will increase prices of all high speed and tool steel grades Oct. 1. The company has not announced its new quotations. Crucible says its over-all costs have risen since the last general increase, Aug. 10, 1956. Several other producers in the Pittsburgh area say that increased prices are "necessary and overdue."

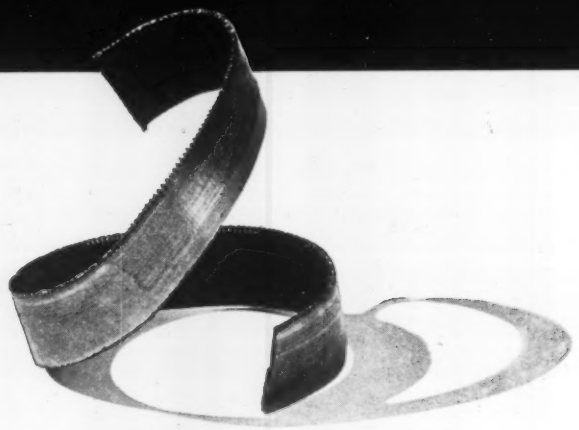
Steel Bars . . .

Bar Prices, Page 113

The over-all bar situation is spotty. In the Pittsburgh district, sales of cold-drawn bars have shown no improvement since August. Some producers have been operating less than five days a week. In New England, carbon bar demand is moderately heavier. Some forge shops report a gradual rise in orders from the automotive industry. In the Chicago area, improved demand from farm implement makers should put a little more life in this market than has prevailed for some time.

Bar consumers are buying against requirements and are depending as far as possible on prompt shipments and their own stocks to cover their needs. In-

LOOK... NO HANDS!



ventories of cold-finished bars generally are down to the point where spotty replacements are needed. There is a lack of large orders, with many potential buyers in this class waiting to see how strong their fourth quarter sales are before making commitments.

Primary producers have substantial stocks of billets on hand for rolling or forging. In the case of cold-finished bars, stock lists of standard sizes and grades are readily available.

A shell contract held by a New Bedford, Mass., shop has been terminated. Defense requirements are lower, marked by the aircraft program stretch-out, resulting in lighter demand for alloy bars.

Wire . . .

Wire Prices, Pages 115 & 116

Heavier demand for wire from the automotive industry has pushed up finishing operations slightly at two New England mills. Orders for valve, high carbon spring, and screw stock are improved, mostly automotive for October shipment. Demand from other industrial consumers is less apparent, but October production schedules will be up moderately.

Most new orders are for prompt delivery, under normal leadtime, and most suppliers are in position to meet this pressure because they have ample semifinished stocks. Demand for furniture spring coil grades is spotty.

Screw prices are sharply competitive; earlier price increases are not holding well.

Plates . . .

Plate Prices, Page 113

Several mills rolling the widest plate sizes are about one month behind their delivery schedules, causing difficulties among some users who have no trouble in obtaining the other plate sizes they require. Despite the slow delivery situation in some mills, plate purchasers say the market is considerably easier than in previous quarters. They add that some mills, which were one or two months behind schedule in early summer, have caught up with their commitments. There have been some increases in allotments from mills, but there's no sign of an early end to the quota system.

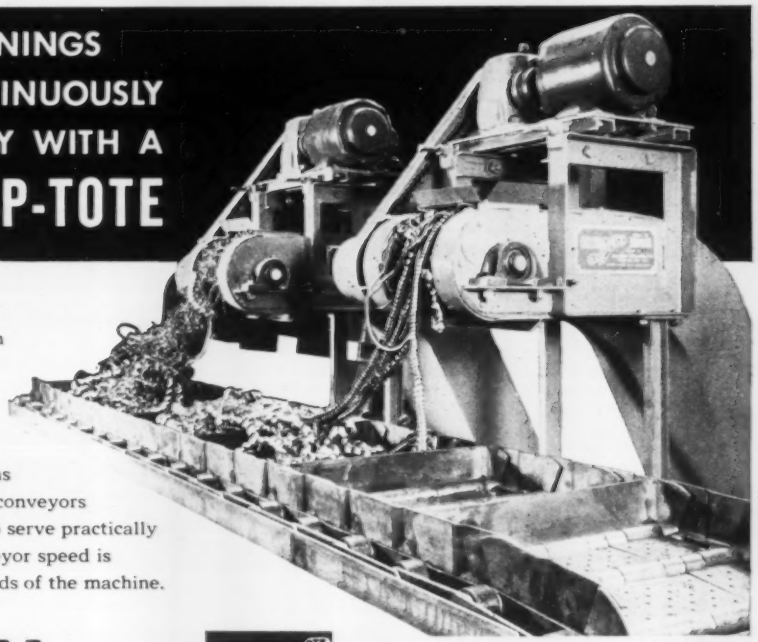
Users of plates say the "premium market" for heavy plates has almost disappeared. There are few offers of conversion tonnage. These purchasers expect to receive some offers of extra tonnages from mills in late fourth quarter, although mills doubt that they will have much extra tonnage.

Light plates are still being produced on strip mills. With excess strip capacity expected to be available through fourth quarter, light plates will probably be in free supply for the balance of this year.

Plate shops in New England are buying on shorter leadtime delivery, except against firm contract requirements for which specifications can be anticipated. Nevertheless, heavy and wide sheared plate capacity for November has been filled in many instances.

Supplies of universal, strip, and light plates in carbon grades generally are in balance with demand and in some instances are more

REMOVE CHIPS, TURNINGS AND BORINGS CONTINUOUSLY AND AUTOMATICALLY WITH A MAY-FRAN CHIP-TOTE



That's right! The May-Fran CHIP-TOTE permits the continuous operation of machine tools by eliminating down-time for scrap removal . . . skilled workers stay on the job . . . production increases by as much as 20%! Versatile CHIP-TOTE conveyors are available in a wide range of sizes to serve practically any type or size of machine tool. Conveyor speed is adjusted to meet the scrap removal needs of the machine.

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Write today for your copy of Bulletin MF-640.

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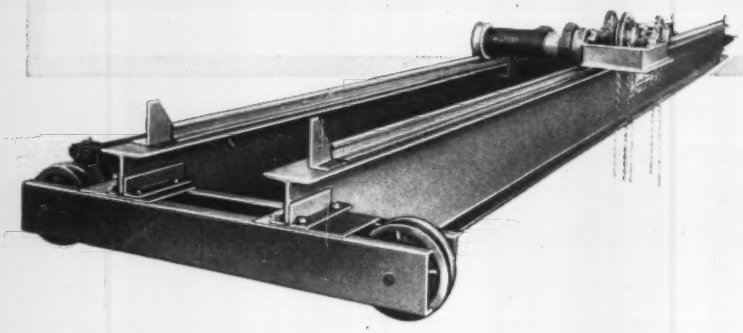
For Low-cost, efficient stand-by service . . . choose a 'Load Lifter' Hand Operated Crane



Type "BR" 'Load Lifter' Hand Operated Cranes are widely favored for intermittent and stand-by service because of features like these:

TWO SPEEDS: First, a safe speed for handling heavy loads. Second, a time-saving speed twice as fast for handling light loads or lifting and lowering the hook without load.

EFFICIENCY: The type of gearing used converts every possible ounce of muscle effort into useful work.

SMOOTH OPERATION: Maximum use is made of roller bearings. The big, grooved drum takes the full run of wire rope without overlapping.

MAXIMUM SAFETY: Double girder construction provides rugged strength. Automatic load brake acts fast — holds the load safely — lowering is always under perfect control. No tail chains hang down to foul the load. Operating chains are as far as possible from the load.

LOW MAINTENANCE: Built of the finest materials, with design and workmanship of the same high quality as the most expensive heavy-duty cranes we manufacture.

If you want the convenience of a reliable, long-life crane for occasional lifting and moving jobs, investigate the Type "BR" 'Load Lifter' Hand Operated Cranes. Capacities: 3 to 50 tons. Lifts: 28 to 37½ feet. Spans: 15 to 60 feet. *Ask your "Shaw-Box" Distributor for details or write for Catalog 218C.*

56H-2R

MAXWELL MANNING M&M & MOORE INC. TRADE MARK

'Load Lifter'® HAND OPERATED CRANES

MANNING, MAXWELL & MOORE, INC.
SHAW-BOX CRANE & HOIST DIVISION
384 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.

than adequate. Supplies of high-tensile, low-alloy, and specialty plates in lighter gages are less easily scheduled. Clad plate shipments are improving, reflecting the freer availability of nickel.

Inventories held by tank and structural shops are in good shape. Buying pressure from this quarter has eased.

Stainless Steel . . .

Stainless Steel Prices, Page 117

Demand for stainless steel strip from manufacturers of tableware is hard hit by Japanese imports. Imports from that country are also adversely affecting demand for 1010 carbon steel strip which is used for making plated ware. At the current rate, imports of stainless and plated tableware may nearly equal domestic production by year end.

Tubular Goods . . .

Tubular Goods Prices, 117

Producers of oil country tube now expect to dispose of all their anticipated fourth quarter production, but they admit they face a tough selling job to accomplish it. Users have trimmed their purchases in line with a new policy of ordering month-by-month instead of for an entire quarter at one time. Some major customers held four months' supply of tube in summer; many are now cutting down to two months' stocks. Result is a drop in demand, although oil country firms are looking for strong operations in 1958, when they believe the inventory reduction program will have been completed.

Pipe fabricating plants in New England are getting all the seamless needed up to 14 in. A leading buyer for several plants, headquartered in New England, is not taking all tonnage offered, although requirements remain heavy. Less than a year ago this buyer was pulling all stops to obtain required tonnages for his several fabricating plants.

Utilities in the district also are not taking all the tonnage they asked for earlier in the year. Some have placed their orders for pipe for delivery next year sooner than they did a year ago, but they are

more realistic as to tonnages required. Distributors' stocks of pipe are ample and direct shipment volume is light.

Mechanical and pressure tubing demand is slow. Delivery is promised within four to five weeks.

The cast iron pipe market on the West Coast is fairly active. The fourth quarter is expected to round out a good year. Several sizable municipal projects are scheduled to come out for bids within 30 days.

Warehouse . . .

Warehouse Prices, Page 118

Distributors' sales of flat-rolled products improved gradually in late September, but the volume is under expectations.

Caution on the part of buyers in placing mill orders may put some additional tonnage on warehouse order books. However, there is no indication that the gains made since summer will continue into October. Sales volume remains below levels recorded a year ago.

Distributors see little chance of a pickup in November and December unless automotive buying gains strength. They point out that such products as tin plate, tubing, and plates may slow late in the fourth quarter. No single product will be strong enough to make up for weakness in sheets and bars.

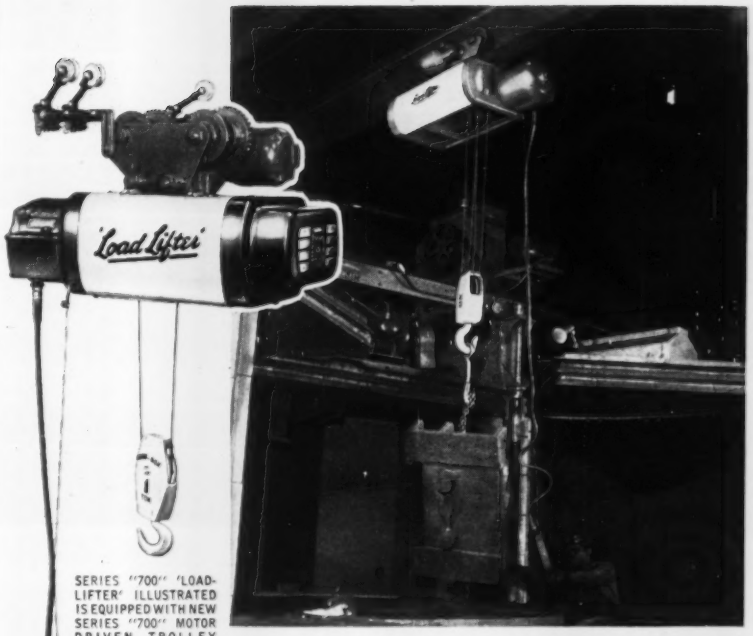
Structural Shapes . . .

Structural Shape Prices, Page 113

General improvement continues in the availability of structural shapes. One purchaser says supply is "much easier, except for some wide-flange beams." Other users agree that standard structurals, angles, and channels can be obtained when required, although these products are still sold on a quota basis.

Wide-flange beam quotas are fairly liberal, but delivery has been running about one month behind schedule, inconveniencing users. One major producer, undertaking mill improvements, is almost two months behind schedule in shipments of wide-flange beams.

Demand continues strong, especially from the building industry. Mills expect to sell all the structurals they can produce in the



SERIES "700" 'LOAD-LIFTER' ILLUSTRATED IS EQUIPPED WITH NEW SERIES "700" MOTOR DRIVEN TROLLEY

HUSKY 'LOAD LIFTER'

LIFTS 1 TON
1 FOOT
IN 1 SECOND

Production economy demands top-quality hoists that are fast, rugged, safe and easy to maintain. You get all four essentials in the Series "700" 'Load Lifter' Electric Hoist.

The Series "700" 'Load Lifter' speeds load handling on every job. With only 24 volts at the push buttons, the operator is safe. It has a load brake and a motor brake. The full load can be held safely by either brake *alone*. Braking action is fast and safe. The load can't drop back. Accurate spotting is never a problem.

The Series "700" 'Load Lifter' Electric Hoist is built extra tough to stand up in the toughest services. Every moving part is engineered and manufactured to function smoothly and without needless wear. Safety construction and safety devices provide complete protection against operational hazards. The hoist can be inspected and serviced *in the air*, without removing the load. Capacities range up to 15 tons. Single and two-speed models available with your choice of suspension. *Get details from your "Shaw-Box" Distributor or write us for Bulletin 410.*

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MAXWELL MANNING M&M & MOORE INC. TRADE MARK

'Load Lifter'® ELECTRIC HOISTS

MANNING, MAXWELL & MOORE, INC.
SHAW-BOX CRANE & HOIST DIVISION
384 West Broadway • Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves, 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

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(Advertisement)

Special Reports On Finishing Non-Ferrous Metals

NUMBER II—Paint Base, Corrosion-Resistant Finishing with Iridite

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a good paint base and decorative finishes for non-ferrous metals. However, continued developments have been so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can obtain proper surface preparation for painting and increase product durability with a single multi-purpose chemical pretreatment. Report I on decorative, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, it is an accepted fact that metal surfaces should be prepared before painting to make possible an efficient paint system. Naturally, this preparation should provide for good initial paint adhesion. Chemical treatments have proved extremely effective in this respect, particularly those of a neutral or preferably acid nature. Further, to be most efficient, chemical treatments should provide a non-porous barrier to maintain adhesion by sealing the metal from the paint and moisture. They should also provide a self-healing film which prevents lateral corrosion in the event that bare metal is exposed through scratching.

The Iridite chromate conversion coatings meet all these requirements. Iridite is a chemical conversion treatment for surface preparation. It provides initial paint bonding by molecular adhesion. It is acid in nature and produces a film that is gel-like and non-porous in structure. Thus, the Iridite film effectively seals the metal from the paint and from moisture penetration. Because the film contains certain relatively soluble constituents, it will protect areas scratched through to bare metal and prevent lateral corrosion. This is accomplished by a gradual leaching of these constituents into the damaged area.

Further, because of its gel-like, non-crystalline nature, the Iridite film will not affect the appearance or texture of the paint film, nor will it dust or powder to mar the painted surface. Because the film is non-porous, paint coverage is increased, thus substantial savings in paint costs will be realized. In addition, treated parts may be stored for long periods of time prior to painting without the risk of entrapped moisture causing blistering when painting.

Iridite chromate conversion coatings are widely used with equal ease and success under both baked and air-dried paint systems. While the actual adherence properties of the Iridite film do not increase appreciably with its thickness, corrosion protection does. The protection of the Iridite film is proportionate to its thickness and should be taken into consideration when selecting the Iridite to meet your needs. However, it is sometimes necessary to sacrifice maximum corrosion protection for appearance when a finished part is to be only partially painted. For example, it may be desirable to use a thin, clear, bright Iridite film if the unpainted areas must present a chrome-like appearance. A typical case is that of instrument housings on which the exterior is painted and the inside left unpainted.

On the other hand, if all surfaces of the product are to be painted and maximum corrosion protection is required, the heavier and most protective Iridite films should be used. For example, all surfaces of zinc die cast fruit juicers are finished with a highly protective Iridite film prior to painting to provide maximum resistance to the corrosive action of fruit juices.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. In addition to providing an excellent base for paint, the Iridite films also have high decorative value when used as final finishes in themselves.

These films can produce a wide variety of pleasing appearances including clear bright, iridescent yellow, bronze, olive drab and brown. In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to their functions as protective and decorative finishes, and as bases for organic finishes and bonding compounds, Iridites have low electrical resistance. Some can be soldered and welded. The film does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

fourth quarter, but demand is less extreme than it has been in previous quarters. Fabricators in some districts are not booking sufficient new business to offset contract completions. Dependence on public work, including highway construction, is increasingly prominent in the structural market picture. Improved steel supply tends to generate increased competition among fabricators on new work. Over-all bids are frequently under estimated costs.

Tin Plate . . .

Tin Plate Prices, Page 115

Producers have been reducing their stocks of tin plate for some time. Tin mill operations are estimated to be only about 80 per cent of capacity.

Iron Ore . . .

Iron Ore Prices, Page 119

Lake shipments of iron ore declined to a daily loading rate of 399,498 tons during the week ended Sept. 23 from 400,202 tons for the preceding week and 447,581 tons for the like week a year ago, reports the American Iron Ore Association, Cleveland. Of total shipments, 2,710,131 tons were to U. S. ports and 86,357 tons to Canadian ports.

Total shipments for the season to Sept. 23 came to 66,587,966 tons, an increase of 15,333,838 tons over the total for the like 1956 period.

Pig Iron . . .

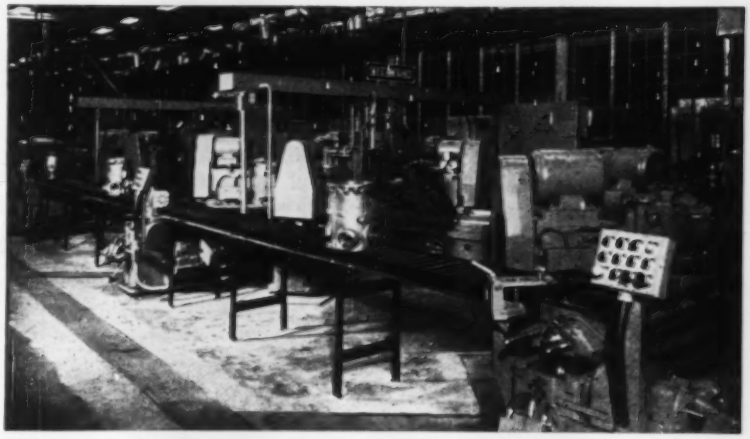
Pig Iron Prices, Page 118

While operating schedules of some foundries have improved slightly, the demand for merchant pig iron continues spotty. Purchasing agents for foundries are exercising unusual caution in making commitments for all raw materials.

Melters show no concern about the availability of iron, such as prevailed a year ago at this time. They are confident that more than enough tonnage will be available throughout the winter season to meet their needs fully. They are also confident that tonnage will be shipped on short notice.

With most steel mills operating below capacity, more iron is availa-

Ask Standard how to cut costs with conveyors



Standard gravity roller conveyors like this are modest in cost, easy to install and maintain.

Conveyor system helps Airtemp up compressor parts production 40%

To handle stepped-up demands for residential and industrial air conditioners, the Airtemp Division of the Chrysler Corporation undertook an extensive re-tooling program. On one compressor crankcase line, for example, they installed 17 new machine tools . . . connected them all with Standard gravity roller conveyors. Result — two hours saving per case, production up 40%.

If you're planning on modernizing or retooling it will pay you, too, to find out how Standard conveyors can complement new equipment . . . give you lower overall costs and greater productive efficiency. STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal cities.

For details — contact the Standard representative listed in the classified phone book or write direct. Ask for Bulletin 309, address Dept. Y-9.

To expedite shipping or stocking and reduce handling costs, investigate Standard lightweight portable roller conveyors (right) or the portable, self-powered HANDIBELT conveyor (left), which can be used horizontally or at varying incline or decline angles.

Standard 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

ble for the merchant trade because hot metal consumption in mills has declined.

Foundries turning out castings for the automotive industry are fairly active now, but those serving the appliance trade report demand is slow. The picture is a spotty one, showing considerable variation from one plant to another.

Adds New Alloy Lines

Whitehead Metal Products Co., New York, will market the line of Shieldalloys to the foundry industry. They include nonferrous master alloys, and high purity, vacuum melting metals. The announcement was made by S. W. Madsen, vice president, Shieldalloy Corp., Newfield, N. J., and E. W. Lothman, vice president, the Whitehead Company.

Refractories . . .

Refractories Prices, Page 119

Seventy per cent alumina brick is now being manufactured by the Ironton Fire Brick Co. at Ironton, Ohio.

The brick is identified as Ironton A1-70, and meets ASTM specifications for this classification of refractories.

Steel mills can obtain Ironton A1-70 in 9-in. straights and series brick, as well as in special shapes.

The Ironton plant has full facilities for making molds from customers' blueprints. Technical data on the new brick are available from the company.

Electromet Revises Prices

Electro Metallurgical Co., division of Union Carbide Corp., New York, reduced prices for standard ferromanganese and increased prices for some chromium and silicon alloys.

A reduction of 0.5-cent a pound for standard ferromanganese lowered the base price to 12.25 cents a pound, f.o.b. Alloy, W. Va.; Ashtabula and Marietta, Ohio; Portland, Oreg., and Sheffield, Ala. The new schedule of prices was effective for all shipments made on and after Sept. 19.

The upward adjustments on specified chromium and silicon alloys, effective Oct. 1, reflect recent cost increases for labor, freight, and raw materials. Increases are:

High-carbon ferrochrome, 1 cent a pound of contained chromium; "Simplex" low-carbon ferrochrome, 2 cents a pound of chromium (as previously announced); and 50 per cent ferrosilicon, 1.2 cents a pound of contained silicon.

Ferrochrome-silicon will now be sold on the basis of the chromium plus the silicon contained in the alloy. Prices for regular low-carbon ferrochrome have been revised to cover two new carbon grades: Max 0.025 and 0.05 per cent carbon. At the same time, other carbon grades have been eliminated.

The following table lists the new base prices for all products affected. All increases apply to the entire schedule for each product, there being no change in quantity, sizing, or packing differential. The prices shown are base prices for the indicated grade of the material in carload lots delivered by rail freight, except for 50 per cent ferrosilicon which is f.o.b. shipping point.

CHROMIUM ALLOYS

	(Cents per lb of chromium contained in alloy except as indicated)
Low-carbon ferrochrome:	
Max 0.02% C	41.00
Max 0.025% C	39.75
Max 0.05% C	39.00
Max 0.10% C	38.50
Max 0.20% C	38.25
Max 0.50% C	38.00
Max 1.00% C	37.75
Max 1.50% C	37.50
Max 2.00% C	37.25
"Simplex" (No. 1 and 2):	
Max 0.01% C	37.75
Max 0.025% C	36.75
High-carbon ferrochrome (reg. grade)	28.75
Low-chromium high-carbon ferrochrome	27.50
Foundry ferrochrome	30.05
Charge chrome	25.00
"SM" ferrochrome	29.85
"Chromtemp" No. 5	35.00
"Chromtemp" No. 8	31.50
Chromium briquets (per lb of briquets)	19.60
Ferrochrome-silicon	27.50*
Ferrosilicon-chrome	37.25
Foundry ferrosilicon-chrome (per lb of alloy)	20.05
Exothermic silicon-chrome	42.50

SILICON ALLOYS

	(Cents per lb of silicon contained in alloy except as indicated)
50% Ferrosilicon	14.20
Ferroaluminum-silicon	17.75
Silicon metal (0.50% Fe grade)	22.50
"SMZ" alloy (per lb of alloy)	20.00
Magnesium-ferrosilicon (per lb of alloy)	20.00

*Plus 14.20 per lb of silicon.

Imported Steel

Prices per 100 lbs. (except where otherwise noted) landed, including customs duty, but no other taxes.

	Atlantic & Gulf Coast	West Coast	Vancouver	Montreal
Deformed Bars (⅜" Dia. incl. all extras)	$6.63	$6.86	$6.61	$6.29
Merchant Bars (¼" Round incl. all extras)	7.62	7.85	7.48	7.22
Bands (1"x⅛"x20' incl. all extras)	7.76	7.98	7.65	7.38
Angles (2"x2"x¼" incl. all extras)	6.57	6.75	6.99	6.69
Beams & Channels (base)	6.82	7.00	7.24	6.94
Furring Channels (C.R. ¾", per 1000')	26.62	27.77	....	....
Barbed Wire (per 82 lb. net reel)	6.95	7.40	7.75	7.80
Nails (bright, common, 20d and heavier)	8.38	8.58	9.07	8.99
Larssen Sheet Piling (section II, new, incl. size extra)	7.80	8.10	8.10	7.80
Wire, Manufacturer's, bright, low C, (11½ga.)	7.38	7.52	8.52	8.52
Wire, galvanized, low C, (11½ ga.)	8.01	8.15	9.42	9.42
Wire, Merchant quality, bl. ann., (10 ga.)	7.60	7.75	8.78	8.78
Rope Wire (.045", 247,000 PSI, incl. extras)	13.60	13.75	13.00	13.00
Wire, fine and weaving, low C, (20 ga.)	10.66	10.80	10.17	12.17
Tie Wire, autom. baler (14G, 97 lbs. net)	9.58	9.73	9.64	9.54
Merchant Pipe (½" galv. T & C, per 100')	8.48	8.83	....	....
Casing (5½", 15.5 J55, T & C, per 100')	194.00	199.00	....	....
Tubing (2⅞", 6.4 J55, EUE, per 100')	103.00	104.00	....	....
Forged R Turn. Bars, C-1035 (from 10" dl.)	14.00	14.23	14.00	13.74

Ask prices on: Bulb tees, bolts and nuts, manganese steel plates and shapes, welded wire reinforcing mesh and hardware cloth, boiler tubes, A-335-P11 pressure pipe.

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DORTMUNDER UNION Originators of Interlock Sheet Piling—Larssen Sheet Piling, Plate, Shapes, Forged Bars and Shafts.
NIEDERRHEIN Europe's most modern Rod Mill—OH, CH, Low Metalloid, Specialty Wire Rod, Merchant Bars.
WESTFAELISCHE UNION Europe's largest Wire Mill—All types drawn Wire and Wire Products—Nails, Barbwire, Wire Rope, Prestress Concrete Wire and Strand.
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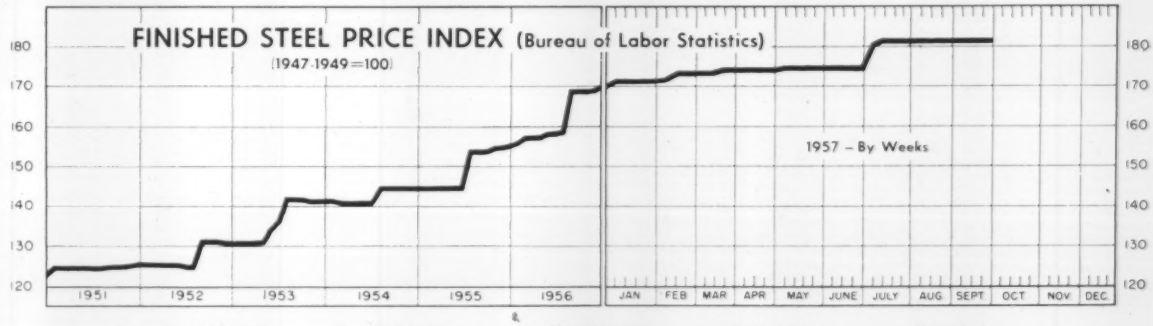
Price Indexes and Composites



Sept. 24, 1957	Week Ago	Month Ago	Sept. Avg.	Year Ago
181.5	181.5	181.5	181.5	168.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 24

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard, No. 1	$5.600	Bars, Reinforcing	6.210
Rails, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Tie Plates	6.600	Bars, C.F., Alloy	13.875
Axles, Railway	9.825	Bars, C.F., Stainlesss, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	60.000	Sheets, H.R., Carbon	6.192
Plates, Carbon	6.150	Sheets, C.R., Carbon	7.089
Structural Shapes	5.942	Sheets, Galvanized	8.220
Bars, Tool Steel, Carbon (lb)	0.480	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.585	Sheets, Electrical	12.025
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.274	Strip, C.R., Carbon	9.243
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.769	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.525	Strip, H.R., Carbon	6.245
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	19.814
Bars, H.R., Carbon	6.425	Pipe, Galv., Buttweld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610
		Tubes, Boiler (100 ft)	49.130
		Tubing, Mechanical, Carbon (100 ft)	24.953
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.225
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 25 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	225.71	181.40
Index in cents per lb	6.479	6.479	6.479	6.114	4.914

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$146.19	$146.19	$146.19	$137.75	$111.66
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	62.63	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	62.18	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	63.41	55.77
Steelmaking Scrap, GT	46.33	48.17	52.17	58.17	43.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point

FINISHED STEEL

	Sept. 25 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Bars, H.R., deld., Philadelphia	5.725	5.725	5.725	4.93	4.502
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Shapes, deld., Philadelphia	5.545	5.545	5.545	5.00	4.13
Plates, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Plates, Chicago	5.10	5.10	5.10	4.85	3.90
Plates, Coatesville, Pa.	5.50	5.50	5.50	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Plates, Claymont, Del.	5.70	5.70	5.70	5.35	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Sheets, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.075
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.75-4.00
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Strip, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.10-5.225
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.35	5.90-6.35
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$9.85	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, 7/32-5/8" Pitts.	6.15	6.15	6.15	5.80	4.325

PIG IRON, Gross Ton

	Sept. 25 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$63.50	$55.50
Basic, Valley	66.00	66.00	66.00	62.50	54.50
Basic, deld., Phila.	70.01	70.01	70.01	66.26	59.25
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, deld., Phila.	70.51	70.51	70.51	66.76	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry(Birm.)deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	63.00	55.00
Malleable, Chicago	66.50	66.50	66.50	63.00	55.00
Ferromanganese, Duquesne	255.00†	255.00†	255.00†	215.00†	228.00*

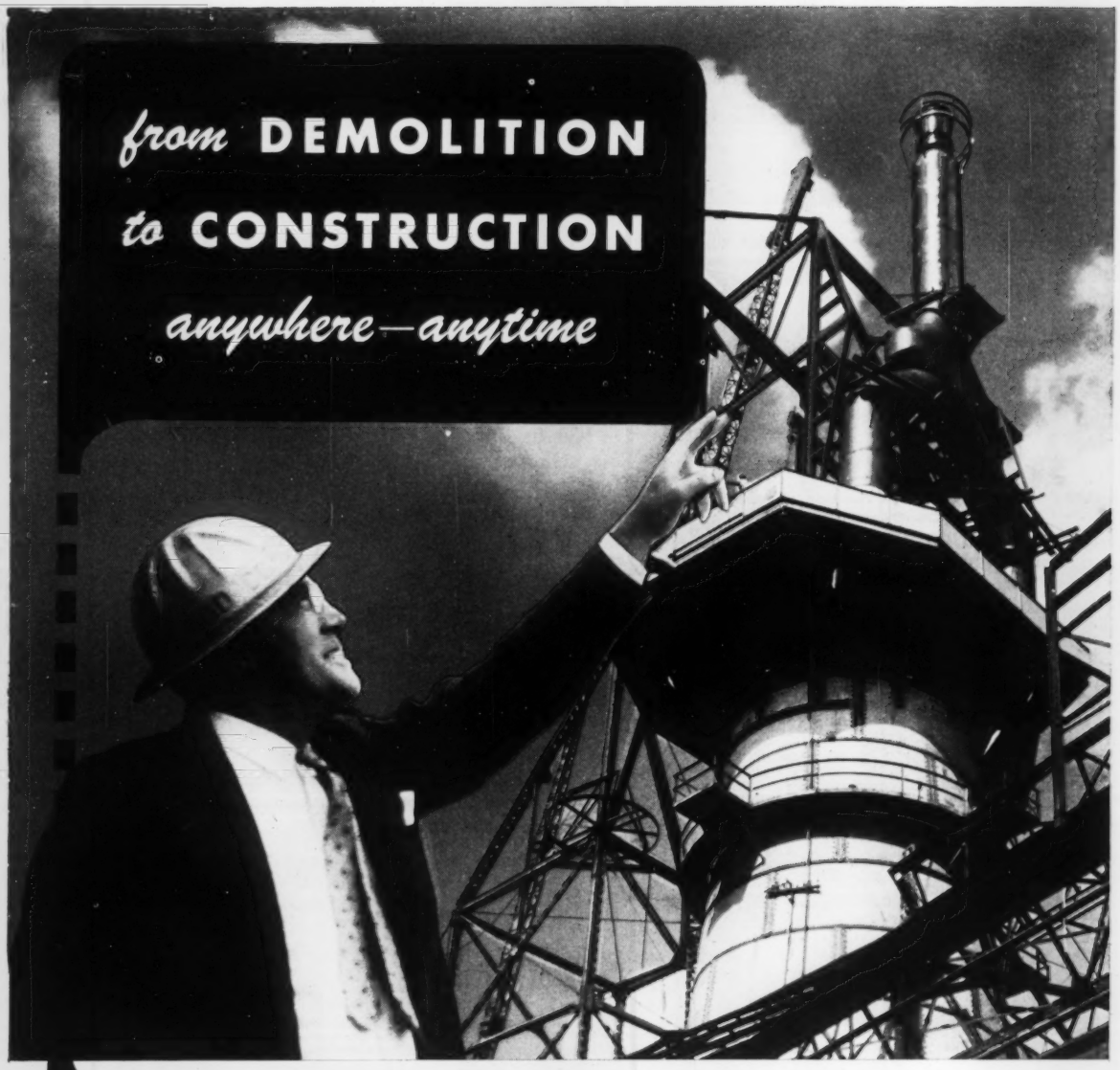
†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$48.50	$49.50	$54.50	$56.50	$44.00
No. 1 Heavy Melt, E. Pa.	43.00	45.50	51.00	58.00	41.50
No. 1 Heavy Melt, Chicago	47.50	49.50	51.00	60.00	42.50
No. 1 Heavy Melt, Valley	43.50	51.50	54.50	65.50	44.00
No. 1 Heavy Melt, Cleve.	39.50	48.50	51.50	63.00	43.00
No. 1 Heavy Melt, Buffalo	47.50	47.50	49.50	57.50	43.00
Rails, Rerolling, Chicago	63.50	64.50	71.50	84.50	52.50
No. 1 Cast, Chicago	41.50	44.50	45.50	53.50	50.00

COKE, Net Ton

Beehive, Furn., Connisvl.	$15.25	$15.25	$15.25	$14.50	$14.75
Beehive, Fdry., Connisvl.	18.25	18.25	18.25	17.50	17.00



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Steel Prices

Mill prices as reported to STEEL, Sept. 25, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key to producers, page 114; to footnotes, page 116.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$73.50

INGOTS, Alloy (NT)
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville,O. S3 .....77.00
Midland,Pa. C18 .....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ...$77.50
Bridgeport,Conn. N19 ..80.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 .....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 .....77.50
Johnstown,Pa. B2 .....77.50
Lackawanna,N.Y. B2 ..77.50
Munhall,Pa. U5 .....77.50
S.Chicago,Ill. R2, U5 ..77.50
S.Duquesne,Pa. U5 ....77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$96.00
Bridgeport,Conn. N19 .101.00
Buffalo R2 .....96.00
Canton,O. R2 .....98.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3 .101.00
Ensley,Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 .....96.00
Geneva,Utah C11 .....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 .....96.00
Lackawanna,N.Y. B2 ..96.00
LosAngeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S.Chicago R2,U5,W14 ..96.00
S.Duquesne,Pa. U5 ....96.00
S.SanFrancisco B3 ....105.50
Warren,O. C17 .....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$114.00
Bridgeport,Conn. N19 .114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3 ..121.00
Detroit S41 .....114.00
Economy,Pa. B14 ....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 ..114.00
Johnstown,Pa. B2 ...114.00
Lackawanna,N.Y. B2 .114.00
LosAngeles B3 .....134.00
Lowellville,O. S3 .....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 ..114.00
S.Duquesne,Pa. U5 ....114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

ROUNDS, SEAMLESS TUBE (NT)
Bridgeport,Conn. N19 $122.50
Buffalo R2 .....117.50
Canton,O. R2 .....120.00
Cleveland,O. R2 .....117.50
Gary,Ind. U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 .....117.50

SKELP
Aliquippa,Pa. J5 .....5.075
Munhall,Pa. U5 .....4.875
Warren,O. R2 .....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ..6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....6.15
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1..6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P17 .....6.15
N.Tonawanda,N.Y. B11..6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 .....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2 ..6.25
Sterling,Ill.(1) N15 ....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
Ala.City,Ala. R2 .....5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 .....5.275
Bessemer,Ala. T2 .....5.275
Bethlehem,Pa. B2 .....5.325
Birmingham C15 .....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 .....6.075
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 ....5.275
Johnstown,Pa. B2 .....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ....5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ....5.50
Portland,Oreg. O4 ....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14..5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ...5.975
Weirton,W.Va. W6 ....5.275

Wide Flange
Bethlehem,Pa. B2 .....5.325
Clairton,Pa. U5 .....5.275
Fontana,Calif. K1 .....6.225
IndianaHarbor,Ind. I-2..5.525
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ....5.50
S.Chicago,Ill. U5 .....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
KansasCity,Mo. S5 .....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill. U5 .....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 .....7.85
Lackawanna,N.Y. B2 ..7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 .....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ..7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ..6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225

PLATES

PLATES, Carbon Steel
Ala.City,Ala. R2 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(15) A10 ...5.10
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 .....5.70
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 .....5.50
Conshohocken,Pa. A3 ..5.20
Ecorse,Mich. G5 .....5.20
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 .....5.30
Harrisburg,Pa. P4 .....5.80
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1..5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ..5.10
LoneStar,Tex. L6 .....5.45
Mansfield,O. E6 .....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale,Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Youngstown R2, U5, Y1..5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .....7.35
Fontana,Calif. K1 .....7.55
Geneva,Utah C11 .....6.75
Johnstown,Pa. B2 .....7.00
SparrowsPoint,Md. B2 ..7.00

PLATES, Wrought Iron
Economy,Pa. B14 .....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Clairton,Pa. U5 .....7.625
Claymont,Del. C22 .....7.625
Cleveland J5, R2 .....7.625
Coatesville,Pa. L7 .....7.925
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 .....7.625
Ecorse,Mich. G5 .....7.725
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1..8.425
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1 7.625
Johnstown,Pa. B2 .....7.625
Lackawanna,N.Y. B2 ..7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 7.625
SparrowsPoint,Md. B2..7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

PLATES, Alloy
Aliquippa,Pa. J5 .....7.20
Claymont,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Economy,Pa. B14 .....7.20
Farrell,Pa. S3 .....7.20
Fontana,Calif.(30) K1 ..8.00
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 .....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 .....7.20

FLOOR PLATES
Cleveland J5 .....6.175
Conshohocken,Pa. A3 ..6.175
Ind.Harbor,Ind. I-2 ...6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

PLATES, Ingot Iron
Ashland c.l. (15) A10..5.35
Ashland l.c.l. (15) A10..5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.425
Aliquippa,Pa.(9) J5 ....5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ..5.425
Birmingham(9) C15 ...5.425
Bridgeport,Conn.(9) N19 5.65
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland(9) R2 .....5.425
Ecorse,Mich.(9) G5 ....5.525
Emeryville,Calif. J7 ...6.175
Fairfield,Ala.(9) T2 ..5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ..6.125
Gary,Ind.(9) U5 .....5.425
Houston(9) S5 .....5.675
Ind.Harbor(9) I-2, Y1.5.425
Johnstown,Pa.(9) B2 ..5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
N.Tonawanda,N.Y.(46)B11 5.775
Pittsburg,Calif.(9) C11..6.125
Pittsburgh(9) J5 .....5.425
Portland,Oreg. O4 .....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..5.425
Torrance,Calif.(9) C11..6.125
Youngstown(9) R2, U5..5.425

BARS, H.R. Leaded Alloy (Including leaded extra)
Warren,O. C17 .....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.475
Bethlehem,Pa. B2 .....6.475
Bridgeport,Conn. N19 ..6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 .....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Economy,Pa. B14 .....6.475
Ecorse,Mich. G5 .....6.575
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind. I-2, Y1 6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ..6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2 .....6.475
Midland,Pa. C18 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....7.925
Bessemer,Ala. T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Bridgeport,Conn. N19 ..7.95
Clairton,Pa. U5 .....7.925
Cleveland R2 .....7.925
Ecorse,Mich. G5 .....8.025
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 .....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 .....7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2..7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14 7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ..5.425
Tonawanda,N.Y. B12 ..5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 .....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.80
KansasCity,Mo. S5 ....6.80
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

BARS, C.F., Leaded Alloy (Including leaded extra)
Ambridge,Pa. W18 ...9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 ....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.925
LosAngeles P2, S30
(Grade A) 11.30
(Grade B) 11.80
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 .....9.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 .....7.90
Bridgeport,Conn. N19 ..7.65
Buffalo B5 .....7.35
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 ....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ..7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 .....7.30
Hammond,Ind. J5, L2 ..7.30
Hartford,Conn. R2 .....7.80
Harvey,Ill. B5 .....7.30
LosAngeles P2, S30 ....8.75
LosAngeles R2 .....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ...7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 .....7.30
Plymouth Mich. P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ...7.85
S.Chicago,Ill. W14 ....7.30
SpringCity,Pa. K3 .....7.75
Struthers,O. Y1 .....7.30
Warren,O. C17 .....7.30
Willimantic,Conn. J5 ..7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa.M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. N19 ..8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 ....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ..8.775
Gary,Ind. R2 .....8.775
GreenBay,Wis. F7 .....8.775
Hammond,Ind. J5, L2..8.775
Hartford,Conn. R2 .....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ..8.775
LosAngeles P2, S30 ..10.65
Mansfield,Mass. B5 ...9.075
Massillon,O. R2, R8 ..8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 ...8.975
S.Chicago W14 .....8.775
SpringCity,Pa. K3 .....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Worcester,Mass. A7 ...9.075
Youngstown F3, Y1 ..8.775

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....5.425
Atlanta A11 .....5.625
Birmingham C15, S42 ..5.425
Bridgeport,Conn. N19 ...5.65
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.775
Emeryville,Calif. J7 ..6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 ....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary, Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2,Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ...6.00
Torrance,Calif. C11 ....6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2 .....7.56
Chicago U8 .....6.91
Cleveland U8 .....6.89
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 .....7.35
Lackawanna,N.Y. B2 ..6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Pittsburgh J5, U8 ....7.10
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4)(44) I-2.5.425
ChicagoHts.(4) C2 ....5.425
Ft.Worth,Tex.(26) T4..5.875
Franklin,Pa. (3) F5 ...5.325
Franklin,Pa.(4) F5 ...5.425
JerseyShore,Pa.(3) J8 ..5.30
Marion,O.(3) P11 .....5.325
Tonawanda(3) R12 ....5.325
Tonawanda (4) B12 ....6.00
Williamsport,Pa. (3)S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 .....4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10....4.925
Cleveland J5, R2 ....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....5.025
Ecorse,Mich. G5 .....5.025
Fairfield,Ala. T2 ....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
Granite City,Ill.(8) G4 ..5.125
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ..4.925
Niles,O. M21, S3 ....4.925
Pittsburg,Calif. C11 ...5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2..4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ...4.925
Youngstown U5, Y1..4.925

SHEETS, H.R., (19 Ga. & Lighter)

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky. A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 ....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.375
Fairfield,Ala. T2 ....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.175
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna (35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14 7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2..7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ....7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ...6.05
Fontana, Calif. K1 ....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 .....6.25
Ind.Harbor,Ind. I-2, Y1 6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ..6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Yorkville, O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled High-Strength, Low-Alloy

Cleveland J5, R2 ....8.975
Ecorse, Mich. G5 .....9.075
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ....10.275
Gary, Ind. U5 .....8.975
IndianaHarbor,Ind. Y1 8.975
Irvin,Pa. U5 .....8.975
Lackawanna (37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint (38) B2 8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert	Cu Steel	Cu Fe
Ashland,Ky. A10	.6.95	7.20
Canton,O. R2	....6.95	7.45
Fairfield T2	....6.95	7.20
Gary,Ind. U5	....6.95	7.20
GraniteCity,Ill. G4	7.15	...
Ind.Harbor I-2	...6.95	7.20
Irvin,Pa. U5	.....6.95	7.20
Kokomo,Ind. C16	.7.05	...
MartinsFry. W10	.6.95	7.20
Pitts.,Calif. C11	.7.70	...
Pittsburgh J5	....6.95	...
SparrowsPt. B2	..6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 .. 7.20

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 .....6.60‡
Ashland,Ky. A10 ....6.60†
Canton,O. R2 .....6.60‡
Dover,O. R1 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60*
GraniteCity,Ill. G4 ....6.80*
Ind.Harbor,Ind. I-2 ...6.60†
Irvin,Pa. U5 .....6.60*
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ...6.60†
Pittsburg,Calif. C11 ...7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ...6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ...9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland (28) R2 ....7.425
Niles,O.(28) R2 .....7.425
Weirton,W.Va. W6 ...7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1).9.25
Butler,Pa. A10 (type 2).9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.825
Ind.Harbor,Ind. I-2,Y1 6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 .....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ...8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	7.00
Gary,Ind. U5	.....7.00
Mansfield,O. E6	.....7.00
Middletown,O. A10	....7.00
Niles,O. M21, S3	.....7.00
Warren,O. R2	.....7.00
Weirton,W.Va. W6	....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .....7.40

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allenghenу Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calmuet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C7 Cleve.Cold Rolling Mills
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymount Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Dearborn Division Sharon Steel Corp.
D4 Disston Division, H. K. Porter Co. Inc
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 EasternGas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md.Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Division, Merritt-Chapman&Scott
M21 Mallory-Sharon Titanium Corp.
M22 Mill Strip Products Co.

N1 National Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N14 Northwest.SteelRoll.Mill
N15 Northwestern S.&W. Co.
N19 Northeastern Steel Corp.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co. Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer.Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Div., H. K. Porter Co. Inc.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	.4.925
Allenport,Pa. P7	.4.925
Alton,Ill. L1	.5.125
Ashland,Ky.(8) A10	.4.925
Atlanta A11	.5.125
Bessemer,Ala. T2	.4.925
Birmingham C15	.4.925
Buffalo(27) R2	.4.925
Conshohocken,Pa. A3	.4.975
Detroit M1	.5.025
Ecorse,Mich. G5	.5.025
Fairfield,Ala. T2	.4.925
Fontana,Calif. K1	.5.825
Gary,Ind. U5	.4.925
Ind.Harbor,Ind. I-2, Y1	4.925
Johnstown,Pa.(25) B2	4.925
Lackaw'na,N.Y.(25) B2	4.925
LosAngeles(25) B3	.5.675
Minnequa,Colo. C10	.6.025
Pittsburg,Calif. C11	.5.675
Riverdale,Ill. A1	.4.925
SanFrancisco S7	.6.35
Seattle(25) B3	.6.35
Seattle N14	.6.35
Sharon,Pa. S3	.4.925
S.SanFrancisco(25) B3	5.675
SparrowsPoint,Md. B2	4.925
Sterling,Ill.(1) N15	.4.925
Sterling,Ill. N15	.5.025
Torrance,Calif. C11	.5.675
Warren,O. R2	.4.925
Weirton,W.Va. W6	.4.925
Youngstown U5	.4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	.8.10
Farrell,Pa. S3	.8.10
Gary,Ind. U5	.8.10
Houston S5	.8.35
Ind.Harbor,Ind. Y1	.8.10
KansasCity,Mo. S5	.8.35
LosAngeles B3	.9.30
Lowellville,O. S3	.8.10
Newport,Ky. A2	.8.10
Sharon,Pa. S3	.8.10
S.Chicago,Ill. W14	.8.10
Youngstown U5, Y1	.8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2	.7.325
Conshohocken,Pa. A3	.7.325
Ecorse,Mich. G5	.7.425
Fairfield,Ala. T2	.7.325
Farrell,Pa. S3	.7.325
Gary,Ind. U5	.7.325
Ind.Harbor,Ind. I-2, Y1	7.325
Lackawanna,N.Y. B2	.7.325
LosAngeles(25) B3	.8.075
Seattle(25) B3	.8.325
Sharon,Pa. S3	.7.325
S.Chicago,Ill. W14	.7.325
S.SanFrancisco(25) B3	8.075
SparrowsPoint,Md. B2	7.325
Warren,O. R2	.7.325
Weirton,W.Va. W6	.7.325
Youngstown U5, Y1	.7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	.5.175
Warren,O. R2	.5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	.7.15
Baltimore T6	.7.15
Boston T6	.7.70
Buffalo S40	.7.15
Cleveland A7, J5	.7.15
Conshohocken,Pa. A3	.7.20
Dearborn,Mich. D3	.7.25
Detroit D2, M1, P20	.7.25
Dover,O. G6	.7.15
Ecorse,Mich. G5	.7.25
Evanston,Ill. M22	.7.25
Follansbee,W.Va. F4	.7.15
Fontana,Calif. K1	.9.00
FranklinPark,Ill. T6	.7.25
Ind.Harbor,Ind. Y1	.7.15
Indianapolis J5	.7.30
LosAngeles J5	.9.05
LosAngeles C1	.9.20
NewBedford, Mass. R10	7.60
NewBritain(10) S15	.7.15
NewCastle,Pa. B4, E5	.7.15
NewHaven,Conn. D2	.7.60
NewKensington,Pa. A6	.7.15
Pawtucket,R.I. R3	.7.80
Pawtucket,R.I. N8	.7.70
Philadelphia(45) P24	.7.70
Pittsburgh J5	.7.15
Riverdale,Ill. A1	.7.25
Rome,N.Y. (32) R6	.7.15
Sharon,Pa. S3	.7.15
Trenton,N.J.(31) R5	.8.60
Wallingford,Conn. W2	.7.60
Warren,O. R2, T5	.7.15
Weirton,W.Va. W6	.7.15
Worcester,Mass. A7	.7.70
Youngstown J5, Y1	.7.15

STRIP, Cold-Rolled Alloy

Boston T6	.15.40
Carnegie,Pa. S18	.15.05
Cleveland A7	.15.25
Dover,O. G6	.15.05
Farrell,Pa. S3	.15.05
FranklinPark,Ill. T6	.15.05
Harrison,N.J. C18	.15.05
Indianapolis J5	.15.20
Lowellville,O. S3	.15.05
Pawtucket,R.I. N8	.15.40
Riverdale,Ill. A1	.15.05
Sharon,Pa. S3	.15.05
Worcester,Mass. A7	.15.55
Youngstown J5	.15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	.10.45
Dearborn,Mich. D3	.10.60
Dover,O. G6	.10.45
Ecorse,Mich. G5	.10.55
Farrell,Pa. S3	.10.50
Ind.Harbor,Ind. Y1	.10.65
Sharon,Pa. S3	.10.50
Warren,O. R2	.10.45

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	....	....
Fostoria,O. S1	10.05	11.15	13.10	16.10	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn.(10) S15	8.95	10.40	12.60	15.60	18.55
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	....	....
Fostoria,O. S1	18.30	22.15	....
FranklinPark,Ill. T6	18.45	22.30	26.65
Harrison,N.J. C18	18.10	21.95	26.30
NewYork W3	18.10	21.95	26.30
Palmer,Mass. W12	18.10	....	....
Trenton,N.J. R5	18.10	21.95	26.30
Worcester,Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R.SHEETS(22 Ga.,cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95
Zanesville,O. A10 (SP coils)	....	....	11.55	12.65	13.70

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.825	•11.05*	11.75*	12.85*	....
IndianaHarbor,Ind. I-2	9.625	†10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625	•11.35	12.05	13.50	14.20
Vandergrift,Pa. U5	9.625	•11.35	12.05	13.15	14.20
Warren,O. R2	9.625	•11.35	12.05	13.15	14.20
Zanesville,O. A10 (FP coils)	...	11.35	12.05	13.15	14.20

H.R. SHEETS (22Ga., cut lengths)	Transformer Grades T-72	T-65	T-58	T-52
BeechBottom, W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	14.75	15.55	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	....
Butler,Pa. A10	....	....	....	19.20	19.70	20.20
Vandergrift,Pa. U5	..	16.60	17.60	19.20	19.70	20.20
Warren,O. R2	....	....	....	....	....	....

15.25**
15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower.

Weirton,W.Va. W6	10.50
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	7.90

STRIP, C.R. Electrogalvanized

Cleveland A7	7.15*
Dover,O. G6	7.15*
Evanston,Ill. M22	7.25*
Riverdale,Ill. A1	7.25*
Warren,O. B9, T5	7.15*
Worcester,Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon,Pa. S3	5.35
Youngstown U5	5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TINPLATE, American 1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala.T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Irvin,Pa. U5	10.05	10.30
Pitts.Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	$7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	.7.65
Aliquippa,Pa. J5	.7.65
Alton,Ill. L1	.7.85
Atlanta A11	.7.85
Bartonville,Ill. K4	.7.75
Buffalo W12	.7.65
Chicago W13	.7.65
Cleveland A7, C20	.7.65
Crawfordsville,Ind. M8	.7.75
Donora,Pa. A7	.7.65
Duluth A7	.7.65
Fairfield,Ala. T2	.7.65
Fostoria,O.(24) S1	.7.75
Houston S5	.7.90
Jacksonville,Fla. M8	.8.00
Johnstown,Pa. B2	.7.65
Joliet,Ill. A7	.7.65
KansasCity,Mo. S5	.7.90
Kokomo,Ind. C16	.7.75
LosAngeles B3	.8.60
Minnequa,Colo. C10	.7.90
Monessen,Pa. P7, P16	.7.65
N.Tonawanda,N.Y. B11	7.65
Palmer,Mass. W12	.7.95
Pittsburg,Calif. C11	.8.60
Portsmouth,O. P12	.7.65
Rankin,Pa. A7	.7.65
S.Chicago,Ill. R2	.7.65
S.SanFrancisco C10	.8.60
SparrowsPoint,Md. B2	.7.75
Sterling,Ill.(1) N15	.7.65
Sterling,Ill. N15	.7.75
Struthers,O. Y1	.7.65
Waukegan,Ill. A7	.7.65
Worcester,Mass. A7	.7.95

WIRE, Gal'd ACSR for Cores

Bartonville,Ill. K4	.12.65
Buffalo W12	.12.65
Cleveland A7	.12.65
Donora,Pa. A7	.12.65
Duluth A7	.12.65
Johnstown,Pa. B2	.12.65
Minnequa,Colo. C10	.12.775
Monessen,Pa. P16	.12.65
Muncie,Ind. I-7	.12.85
NewHaven,Conn. A7	.12.95
Palmer,Mass. W12	.12.95
Pittsburg,Calif. C11	.13.45
Portsmouth,O. P12	.12.65
Roebling,N.J. R5	.12.95
SparrowsPt. Md. B2	.12.75
Struthers,O. Y1	.12.65
Trenton,N.J. A7	.12.95
Waukegan,Ill. A7	.12.65
Worcester,Mass. A7	.12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	.9.30
Alton,Ill. L1	.9.50
Buffalo W12	.9.30
Cleveland A7	.9.30
Donora,Pa. A7	.9.30
Duluth A7	.9.30
Johnstown,Pa. B2	.9.30
KansasCity,Mo. S5	.9.55
LosAngeles B3	.10.25
Minnequa,Colo. C10	.9.50
Monessen,Pa. P7, P16	.9.30
New Haven,Conn. A7	.9.60
Palmer,Mass. W12	.9.60
Pittsburg,Calif. C11	.10.25
Portsmouth,O. P12	.9.30
Roebling,N.J. R5	.9.60
S.Chicago,Ill. R2	.9.30
S.SanFrancisco C10	.10.25
SparrowsPt.,Md. B2	.9.40
Struthers,O. Y1	.9.30
Trenton,N.J. A7	.9.60
Waukegan,Ill. A7	.9.30
Worcester,Mass. A7	.9.60

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	.9.30
Alton,Ill. L1	.9.50
Bartonville,Ill. K4	.9.40
Buffalo W12	.9.30
Cleveland A7	.9.30
Donora,Pa. A7	.9.30
Duluth A7	.9.30
Fostoria,O. S1	.9.35
Johnstown,Pa. B2	.9.30
KansasCity,Mo. S5	.9.55
LosAngeles B3	.10.25
Milbury,Mass.(12) N6	.9.60
Minnequa,Colo. C10	.9.50
Monessen,Pa. P7, P16	.9.30
Muncie,Ind. I-7	.9.50
Palmer,Mass.(12) W12	.9.60
Pittsburg,Calif. C11	.10.25
Portsmouth,O. P12	.9.30
Roebling,N.J. R5	.9.60
S.Chicago,Ill. R2	.9.30
S.SanFrancisco C10	.10.25
SparrowsPt.,Md. B2	.9.40
Struthers,O. Y1	.9.30
Trenton,N.J. A7	.9.60
Waukegan,Ill. A7	.9.30
Worcester,A7, J4, T6	.9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	.15.80
Bartonville,Ill. K4	.15.70
Buffalo W12	.15.60
Chicago W13	.15.60
Cleveland A7	.15.60
Crawfordsville,Ind. M8	.15.70
Fostoria,O. S1	.15.60
Houston S5	.15.85
Jacksonville,Fla. M8	.15.95
Johnstown,Pa. B2	.15.60
KansasCity,Mo. S5	.15.85
Kokomo,Ind. C16	.15.60
Minnequa,Colo. C10	.15.85
Monessen,Pa. P7, P16	.15.60
Muncie,Ind. I-7	.15.80
Palmer,Mass. W12	.15.90
S.SanFrancisco C10	.16.45
Waukegan,Ill. A7	.15.60
Worcester,Mass. A7, T6	15.90

ROPE WIRE

Bartonville,Ill. K4	.12.75
Buffalo W12	.12.75
Fostoria,O. S1	.12.75
Johnstown,Pa. B2	.12.75
Monessen,Pa. P7	.12.75
Muncie,Ind. I-7	.12.95
Palmer,Mass. W12	.13.05
Portmouth,O. P12	.12.75
Roebling,N.J. R5	.13.05
SparrowsPt.,Md. B2	.12.85
Struthers,O. Y1	.12.75
Worcester,Mass. J4	.13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. M8	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.95
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Houston,Tex. S5	178
Fairfield,Ala. T2	173
Jacksonville,Fla.(20) M8	184
Joliet,Ill. A7	173
Johnstown,Pa. B2	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ....$8.95

NAILS, Cut (100 lb keg)

To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Jacksonville,Fla.(20) M8	186
Joliet,Ill. A7	175
Johnstown,Pa. B2	175
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box)

	Coil No. 3150
AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	9.82
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.82
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

	Coil No. 6500 Stand.
AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.15
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	11.16
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

	Coil No. 6500 Interim
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.20
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	11.21
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	219
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
Sterling,Ill.(7) N15	214
SparrowsPt.,Md.B2	214
Williamsport,Pa. S19	175

FENCE POSTS

Birmingham C15	171
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	171
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193††
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston,Tex. S5	198**
Jacksonville,Fla. M8	203
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196*
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213**
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198§

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston,Tex. S5	192**
Jacksonville,Fla. M8	197
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192§

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	....
Crawf'dsville M8	17.25	19.05
Fostoria,O. S1	17.65	19.20†
Houston S5	17.40	18.95**
Jacksonville M8	17.50	19.30
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	....
Kokomo C16	17.25	18.80†
Minnequa C10	17.40	18.95**
P'lm'r,Mass.W12	17.45	19.00†
Ptts.,Calif. C11	17.50	19.05†
SparrowsPt. B2	17.25	19.05§
Sterling(37) N15	17.25	19.05§
Waukegan A7	17.15	18.70†
Worcester A7	17.45	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Galv.
Ala.City,Ala. R2	8.65 9.20**
Aliquippa J5	8.65 9.325§
Atlanta(48) A11	8.75 9.425*
Bartonville(48) K4	8.75 9.425
Buffalo W12	8.65 9.20†
Cleveland A7	8.65 ....
Crawfordsville M8	8.75 9.425
Donora,Pa. A7	8.65 9.20†
Duluth A7	8.65 9.20†
Fairfield T2	8.65 9.20†
Houston(48) S5	8.90 9.45**
Jacks'ville,Fla. M8	9.00 9.675
Johnstown B2(48)	8.65 9.325§
Joliet,Ill. A7	8.65 9.20†
Kans.City(48) S5	8.90 9.45**
Kokomo C16	8.75 9.30†
LosAngeles B3	9.60 10.275§
Minnequa C10	8.90 9.45**
Monessen P7(48)	8.65 9.25*
Palmer,Mass. W12	8.95 9.50†
Ptts.,Calif. C11	9.60 10.15†
Rankin,Pa. A7	8.65 9.20†
S.Chicago R2	8.65 9.20**
S.SanFran. C10	9.60 10.15**
Spar'wsPt.B2(48)	8.75 9.425§
Sterling(48) N15	8.90 9.575§
Sterling(1)(48)	8.80 9.475§
Struth'rs,O.(48)Y1	8.65 9.30‡
Worcester,Mass.A7	8.95 9.50†

Based on zinc price of: *13.50c. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts

Full Size Body (cut thread)	
½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0
Undersized Body (rolled thread)	
½ in. and smaller:	
6 in. and shorter	49.0

Carriage, Machine, Lag Bolts Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0

Stove Bolts, Slotted:

⅛ to ¼-in. incl., 3 in. and shorter	55.0
⅝ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:

6 in. and shorter:

⅝ in. and smaller	40.0
¾, ⅞ and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾, ⅞ and 1 in. diam.	+6.0

High Carbon, Heat Treated:

6 in. and shorter:

⅝ in. and smaller	26.0
¾, ⅞ and 1 in. diam.	3.0

Longer than 6 in.:

⅝ in. and smaller	+13.0
¾, ⅞ and 1 in. diam.	+32.0

Flat Head Capscrews:

¾ in. and smaller +76.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam:

6 in. and shorter	Net
Longer than 6 in.	+23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25
⅞ in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld All H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2½	12	46.99	55.06	41.81
2¾	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All 60 lb	Tee Rails Under
RAILS				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Huntington,W.Va. C15	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	....
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	....
Johnstown,Pa. B2	....	....	....(16)	6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	....
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer,Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 13 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) Plus 1c per 1000 lb.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(26) Delivered in mill zone, 6.045c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.60c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(45) 0.022 in. and lighter, over 0.022", 8.20c.
(46) Special quality.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 8.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+19	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	....	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	....	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.50	55.50
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	....	....	86.50	....	92.75	....	104.50
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	81.50	81.50
316L	....	....	70.00	76.50	77.00	80.75	84.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.25	48.25	48.25
420	....	33.50	34.25	41.75	39.25	41.25	45.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., H. K. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. C. Carlson Inc.; Charter Wire Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

Stainless	Plates—Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	40.00
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.40	49.50	54.50	58.75
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.95	40.25

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.290	Cr Hot Work	0.45-0.495
Extra Carbon	0.345	W-Cr Hot Work	0.43-0.475
Special Carbon	0.41-0.45	V-Cr Hot Work	0.460
Oil Hardening	0.450	Hi-Carbon-Cr	0.830

Grade by Analysis (%)

W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....		4.170
18.25	4.25	1	4.75	....		2.385
18	4	2	9	....		2.755
18	4	2	....	....		1.845
18	4	1	....	....		1.680
9	3.5	..	....	....		1.275
13.5	4	3	....	....		1.945
13.75	3.75	2	5	....		2.325
6.4	4.5	1.9	....	5		1.185
6	4	3	....	6		1.430
1.5	4	1	....	8.5		1.040

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
AlabamaCity,Ala. R2	62.00	62.50	....	....
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	....	66.50	....
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	68.62	69.12	69.12	69.62
Muskegon,Mich., deld.	....	74.12	74.12	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,O., deld.	69.12	69.62	69.62	70.12
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	66.50	67.00	67.50	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.10	75.60	....
Newark,N.J., deld.	72.29	72.79	73.29	73.79
Philadelphia, deld.	70.01	70.51	71.01	71.59
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville, Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard, O. Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,O., deld.	70.90	....	71.40	71.90
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	66.50	67.00	67.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,O. I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.54	73.04	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof ovr base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,O. I-3, J1	78.00
Buffalo H1	78.50

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.27
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle no change.

	SHEETS				STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.76	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	....	9.42	9.73	....	15.28	9.63	9.72	11.20
Buffalo	8.25	9.45	11.07	....	8.50	8.80	....	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.00	....	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.05	....	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	9.95	....	8.33	8.69	....	14.74	9.01	8.79	10.11
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	9.82	9.74	11.06
Detroit	8.43	9.70	10.35	....	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	8.45	9.75	8.45	....	8.60	9.05	11.10	....	9.10	9.05	10.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	9.50	10.75	11.65	....	9.55	9.70	12.75	16.00	9.60	9.55	11.70
Milwaukee	8.33	9.58	10.13	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	....	9.31	9.57	....	15.09	9.35	9.43	10.71
Norfolk, Va.	8.05	....	....	....	8.55	8.60	10.80	....	8.95	8.45	9.95
Philadelphia	8.00	8.90	9.87	51.94	8.67	8.65	11.51#†††	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.35	50.00	8.33	8.60	....	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.20	11.35‡‡	8.65	14.65#	15.95	9.60	8.30	12.50
Richmond, Va.	8.45	....	10.40	....	9.15	9.15	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.61	....	8.84	9.36	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	54.85	9.45	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	57.20	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Spokane, Wash.	9.95	11.15	12.00	....	10.00	10.10	14.05	17.10	9.80	9.70	12.10
Washington	8.48	9.58	....	....	9.06	9.15	9.73	....	9.35	8.86	10.36

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡over 4 in.; §§over 3 in.; #1 in. round C-1018; †††item quantity.

Base quantities, 2000 to 4999 lb except as noted: cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [5]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, O., $138; Cutler, Utah, $165.

Super-Duty: Ironton, O., Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St., Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., $150; Warren, Niles, Windham, O., Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, O., Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Silica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, O., $96.75; Clearfield, Pa., Portsmouth, O., $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Pa., $245.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Philadelphia, Clearfield, Orviston, Pa., $305.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Philadelphia, Clearfield, Orviston, Pa., $345.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, O., $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, bulk ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅝ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-41; 70%, $36.40; 60%, $33-36.50. Imported, net tons, f.o.b. cars point of entry duty paid, metallurgical grade: European, $33-34; Mexican, all-rail, duty paid, $25.25-25.75; barge, Brownsville, Tex., $27.25-27.75.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: Deld. east of Mississippi River, ocean bags 23,000 lb and over..	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
F.o.b. Riverton, N. J., west of Mississippi River	9.50
Sponge Iron, Canadian: F.o.b. shipping point	9.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

	Cents
Aluminum: Atomized, 500 lb drum, frght allowed Carlots	39.50
Ton lots	41.50
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	32.00-39.70†
Bronze, 5000-lb lots	49.50-54.10†
Copper: Electrolytic	14.25*
Reduced	14.25*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed ...	$1.15
Nickel-Silver, 5000-lb lots	50.20-54.80†
Phosphor-Copper, 5000-lb lots	61.30
Copper (atomized) 5000-lb lots	41.80-50.30‡
Silicon	47.50
Solder	7.00*
Stainless Steel, 304 ...	$1.02
Stainless Steel, 316 ...	$1.20
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten: Dollars Melting grade, 99% 60 to 2000 mesh: 1000 lb and over ... 3.75 Less than 1000 lb ... 3.90	
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Diam	Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305...	$6.30	$6.25	$6.25	$6.50
Bar Size Angles	6.62	6.57	6.57	6.75
Structural Angles	6.62	6.57	6.57	6.75
I-Beams	6.87	6.82	6.82	7.00
Channels	6.87	6.82	6.82	7.00
Plates (basic bessemer)	8.35	8.30	8.30	8.60
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.79	26.67	26.67	27.36
Barbed Wire (†)	6.95	6.95	6.95	7.40
Merchant Bars	6.87	6.82	6.82	7.22
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.38	8.38	8.38	8.58

†Per 82 lb, net, reel. §Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old range bessemer	11.85
Old range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic concentrates	62-64% 25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	27.00-27.50
N. African hematite (spot)	nom.
Brazilian iron ore, 68-69%	30.00

Tungsten Ore

Net ton, unit, before duty

Foreign wolframite, good commercial quality	13.75-14.25
Domestic, concentrates mine	55.00

Manganese Ore

Mn 46-48%, Indian (export tax included), $1.35-$1.45 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, $1.35-$1.45; contracts by negotiation.

Chrome Ore

Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$55.00-58.00
48% 2.8:1	52.00-55.00
48% no ratio	46.00-48.00

South African Transvaal

48% no ratio	$40.00-41.00
44% no ratio	30.00-31.00

Turkish

48% 3:1	$59.00-62.00

Domestic

Rail nearest seller

18% 3:1	$39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.18

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

55-60%	$2.90-3.30
60-65%	3.30-3.60

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace.....	$14.75-15.75
Connellsville, Pa., foundry.....	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.25
Saginaw, Mich., deld.	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, O., ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Painesville, O., ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
Neville Island (Pittsburgh), Pa., ovens.	29.25
St. Paul, ovens	29.75
Chicago, deld.	33.24
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg.	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00

Cents per pound, producing point

Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, pre gross ton, Palmerton, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively.

(Mn 79-81%). Lump $263 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C. 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Managanese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk, 27.75c per lb of contained Cr; c.l. packed 29.3c, ton lot 31.05c; less ton 32.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-71%). Contract, carload, lump, bulk, C 0.025% max (Simplex) 34.75c per lb contained Cr, 0.02% max 41.5c, 0.03% max 41c, 0.06% max 39.5c, 0.1% max 39c, 0.15% max 38.75c, 0.2% max 38.5c, 0.5% max 38.25c, 1.0% max 37.5c, 1.5c max 37.35c, 2.0% max 37.25c. Ton lot, add 3.4c, less ton add 5.1c. Carload packed add 1.75c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 29.05c per lb of contained Cr. Packed, c.l. 30.65c, ton 32.45c, less ton 33.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 20.85c, per lb of alloy, ton lot 22.10c; less ton lot 23.3c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome-Silicon: (Cr 39-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 41.35c per lb of contained Cr; 1" x down, bulk, 42.35c. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less caarload lot, packed $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 13c per lb of contained Si. Packed c.l. 15.5c, ton lot 16.95c, less ton 18.6c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosoilicon: Contact, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 20.00c per lb of Si. Packed, cl. 21.65c, ton lot 22.95c, less ton 23.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUTTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19c per lb of briquet, carload packed in box pallets 19.2c, in bags 20.1c; 3000 lb to c.l. in box pallets 20.4c; 2000 lb to c.l. in bags, 21.3c; less than 2000 lb in bags 22.2c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l. bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c. 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l. bags 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.95 per lb of contained W; 2000 lb W to 5000 lb W, $3.05; less than 2000 lb W, $3.17. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Contract, ton lot 2" x D, $4.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $4.25 per lb of contained Cb plus Ta, delivered; less ton lot $4.30.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 19c per lb of alloy, ton lot 20.15c, less ton 21.4c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5.7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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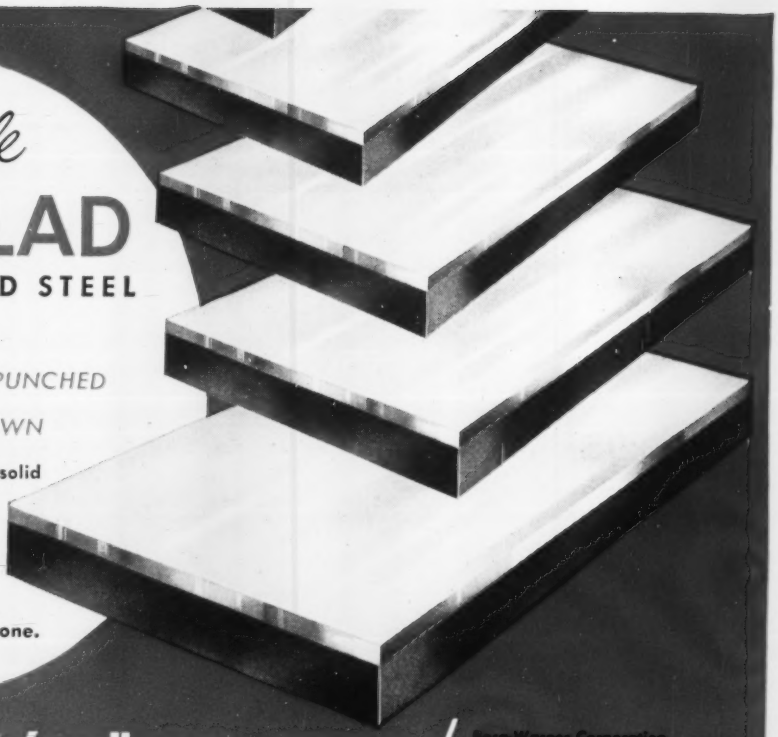

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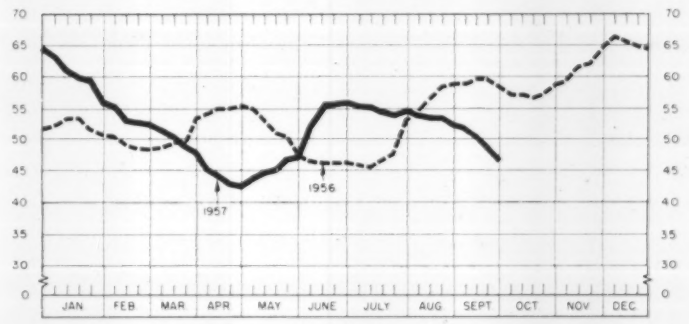
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL



Sept. 25 1957	Week Ago	Month Ago	Year Ago	Aug. Avg.
$46.33	$48.17	$52.17	$58.17	$53.33

Scrap Prices Continue To Sag

STEEL's composite on No. 1 heavy melting drops $1.84 to $46.33, lowest level since mid-May. Market now lacks support of active buying for export

Scrap Prices, Page 124

Philadelphia—Steel scrap prices are soft. No. 1 heavy melting is off $2.50 a ton at $43, delivered. No. 1 bundles and busheling hold relatively steadier, the decline being held to 50 cents a ton. Lower prices also are posted on No. 1 cupola and heavy breakable cast.

New buying is light, with few mills participating. Export buying holds up well for accumulation of tonnage for two boats. Beyond this business, some easing in demand for export is indicated.

Pittsburgh — Scrap prices continue to drop. An independent mill which formerly bought large tonnages on the open market now says, "We haven't bought any scrap in the past month and we don't intend to re-enter the market soon." Another major buyer has such large stocks of home scrap he doesn't need purchased scrap.

New York—The price sag in primary grades of heavy melting steel and turnings is accompanied by a slight decline in cast grades. Brokers are paying $1 a ton less at shipping points for most steelmaking grades, although No. 2 bundles and No. 2 heavy melting are unchanged. New buying is light, and shipments against old orders are smaller.

Boston — Heavy melting steel scrap buying is slow with prices unchanged in an untested market. Machine shop turnings and borings are quoted $2 a ton lower, while brokers are paying $19 to $20 for short shovel turnings, a drop of $1 a ton.

Chicago—Sluggishness continues in the scrap market here. Limited buying by one mill in the area served to put some life into the market last week, but it wasn't enough to stem the price decline that has been underway for some time.

Cleveland—Scrap prices slumped last week as the law of supply and demand asserted itself with vengeance. With buyers showing little interest (due to sizable inventories in some instances) in the increased offerings of industrial scrap, prices dropped $10 to $15 a ton. Nervousness was evident in all segments of the market, and sellers would not hazard a guess as to the level that will attract buying support.

Youngstown—The local iron and steel scrap market is beginning to show signs of distress. No orders of consequence are showing up to reduce the mounting scrap piles. Steel mills are depending on blast furnaces for pig, "home" scrap, and scrap inventories. Nominal prices have declined steadily.

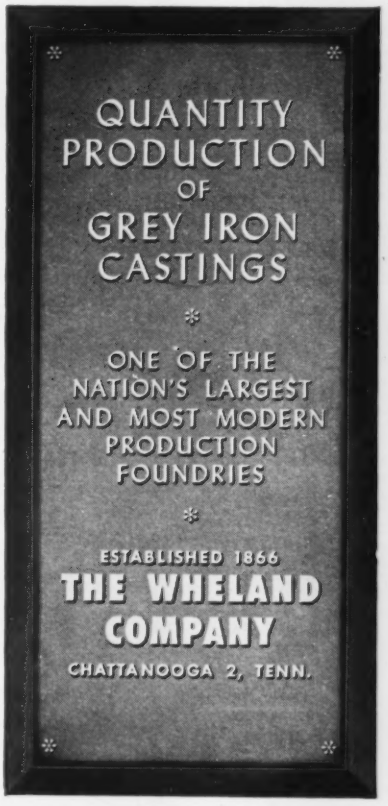
Detroit—Auto lists are carrying half normal tonnages, but dealers are trying to renege on previously placed orders. Although trade reports put No. 1 grades $5 to $6 below current levels, indications are the drop won't be that steep.

Buffalo—While scrap prices are nominally unchanged here, a softer undertone has developed due to almost complete lack of buying interest and continuing weakness in some other scrap centers.

Dealers complain that demand has shown no recovery from its midsummer slump. Only one large steel mill in this area is taking sizable tonnages. Two other mills and the big foundry users are either out of the market entirely or taking only limited quantities.

Purchasing agents have become cautious and are buying on a limited basis. Indications are the prices for leading mill grades will be off at least a couple of dollars

(*Please turn to Page* 129)



Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Sept. 25, 1957. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Sept. 25	$46.33
Sept. 18	48.17
Aug. Avg	53.33
Sept. 1956	59.08
Sept. 1952	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*48.00-49.00*
No. 2 heavy melting	*42.00-43.00*
No. 1 factory bundles	*56.00-57.00*
No. 1 dealer bundles	*48.00-49.00*
No. 2 bundles	*37.00-38.00*
No. 1 busheling	*48.00-49.00*
Machine shop turnings	*28.00-29.00*
Mixed borings, turnings	*28.00-29.00*
Short shovel turnings	*31.00-32.00*
Cast iron borings	*31.00-32.00*
Cut structurals:	
2 ft. and under	*55.00-56.00*
3 ft length	*54.00-55.00*
Heavy turnings	*44.00-45.00*
Punchings & plate scrap	*54.00-55.00*
Electric furnace bundles	*54.00-55.00*

Cast Iron Grades

No. 1 cupola	48.00-49.00
Stove plate	42.00-43.00
Unstripped motor blocks	33.00-34.00
Clean auto cast	49.00-50.00
Drop broken machinery	57.00-58.00

Railroad Scrap

No. 1 R.R. heavy melt	54.00-55.00
Rails, 2 ft and under	71.00-72.00
Rails, 18 in. and under	72.00-73.00
Angles, splice bars	61.00-62.00
Rails, rerolling	70.00-71.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-235.00
18-8 turnings	125.00-135.00
430 bundles & solids	80.00-85.00
430 turnings	55.00-60.00

CLEVELAND

No. 1 heavy melting	*39.00-40.00*
No. 2 heavy melting	*34.00-35.00*
No. 1 factory bundles	*42.00-43.00*
No. 1 bundles	*39.00-40.00*
No. 2 bundles	*30.00-31.00*
No. 1 busheling	*39.00-40.00*
Machine shop turnings	*15.00-16.00*
Short shovel turnings	*19.00-20.00*
Mixed borings, turnings	*19.00-20.00*
Cast iron borings	*19.00-20.00*
Cut foundry steel	*45.00-46.00*
Cut structurals, plates 2 ft and under	*49.00-50.00*
Low phos. punchings & plate	*40.00-41.00*
Alloy free, short shovel turnings	*24.00-25.00*
Electric furnace bundles	*39.00-40.00*

Cast Iron Grades

No. 1 cupola	*47.00-48.00*
Charging box cast	*37.00-38.00*
Heavy breakable cast	*35.00-36.00*
Stove plate	*44.00-45.00*
Unstripped motor blocks	*31.00-32.00*
Brake shoes	*35.00-36.00*
Clean auto cast	*48.00-49.00*
Burnt cast	*33.00-34.00*
Drop broken machinery	*50.00-51.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*
R.R. malleable	*54.00-55.00*
Rails, 2 ft and under	*66.00-67.00*
Rails, 18 in. and under	*67.00-68.00*
Rails, random lengths	*59.00-60.00*
Cast steel	*57.00-58.00*
Railroad specialties	*59.00-60.00*
Uncut tires	*54.00-55.00*
Angles, splice bars	*59.00-60.00*
Rails, rerolling	*64.00-65.00*

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	*220.00-225.00*
18-8 turnings	*120.00-125.00*
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

YOUNGSTOWN

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*38.00-39.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	*35.00-36.00*
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*16.00-17.00*
Short shovel turnings	*22.00-23.00*
Cast iron borings	*22.00-23.00*
Low phos.	*45.00-46.00*
Electric furnace bundles	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*47.00-48.00*

CHICAGO

No. 1 heavy melt., indus.	*49.00-50.00*
No. 1 hvy melt., dealer	*45.00-46.00*
No. 2 heavy melting	*40.00-41.00*
No. 1 factory bundles	*50.00-51.00*
No. 1 dealer bundles	*46.00-47.00*
No. 2 bundles	*30.00-31.00*
No. 1 busheling, indus.	*48.00-49.00*
No. 1 busheling dealer	*44.00-45.00*
Machine shop turnings	*24.00-25.00*
Mixed borings, turnings	*27.00-28.00*
Short shovel turnings	*27.00-28.00*
Cast iron borings	*27.00-28.00*
Cut structurals, 3 ft	*48.00-49.00*
Punchings & plate scrap	*49.00-50.00*

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Stove plate	*39.00-40.00*
Unstripped motor blocks	*33.00-34.00*
Clean auto cast	*46.00-47.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*53.00-54.00*
R.R. malleable	*55.00-56.00*
Rails, 2 ft and under	*62.00-63.00*
Rails, 18 in. and under	*62.00-63.00*
Angles, splice bars	*55.00-56.00*
Axles	*62.00-63.00*
Rails, rerolling	*63.00-64.00*

Stainless Steel Scrap

18-8 bundles & solids	*215.00-225.00*
18-8 turnings	*115.00-125.00*
430 bundles & solids	*80.00-90.00*
430 turnings	*55.00-60.00*

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*34.00-35.00*
Machine shop turnings	*17.00-18.00*
Mixed borings, turnings	*18.00-19.00*
Short shovel turnings	*19.00-20.00*
Punchings & plate scrap	*47.00*

Cast Iron Grades

No. 1 cupola	*44.00*
Stove plate	*41.00*
Charging box cast	*41.00*
Heavy breakable	*40.00*
Unstripped motor blocks	*28.50*
Clean auto cast	*47.00*
Malleabe	*50.00†*

†Nominal

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	46.00
No. 2 heavy melting	43.00
No. 1 bundles	46.00
No. 2 bundles	37.00
No. 1 busheling	46.00
Machine shop turnings	30.00
Short shovel turnings	32.00

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	42.00
Heavy breakable cast	42.00
Unstripped motor blocks	42.00
Brake shoes	40.00
Clean auto cast	48.00
Stove plate	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	52.00
Rails, 18 in. and under	69.00
Rails, random lengths	60.00
Rails, rerolling	70.00
Anges, splice bars	59.00

PHILADELPHIA

No. 1 heavy melting	*43.00*
No. 2 heavy melting	*39.00*
No. 1 bundles	*46.00*
No. 2 bundles	*34.00*
No. 1 busheling	*46.00*
Electric furnace bundles	*49.00*
Mixed borings, turnings	28.00
Short shovel turnings	30.00
Machine shop turnings	26.00
Heavy turnings	*39.00*
Structural & plate	*51.00-52.00*
Coupiers, springs, wheels	63.50
Rail crops, 2 ft & under	69.00-71.00

Cast Iron Grades

No. 1 cupola	*46.00*
Heavy breakable cast	*49.00*
Malleable	61.00
Drop broken machinery	56.00-57.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	36.00-37.00
No. 1 bundles	*44.00-45.00*
No. 2 bundles	30.00-31.00
Machine shop turnings	*15.00-16.00*
Mixed borings, turnings	*16.00-17.00*
Short shovel turnings	*17.00-18.00*
Low phos. (structural & plate	*48.00-49.00*

Cast Iron Grades

No. 1 cupola	*44.00-45.00*
Unstripped motor blocks	*37.00-38.00*
Heavy breakable	*43.00-44.00*

Stainless Steel

18-8, sheets, clips, solids	190.00-200.00
18-8 borings, turnings	90.00-100.00
430 sheets, clips, solids	65.00-75.00
410 sheets, clips, solids	50.00-55.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.00-39.00
No. 2 heavy melting	32.00-33.00
No. 1 bundles	38.00-39.00
No. 2 bundles	29.00-30.00
No. 1 busheling	38.00-39.00
Machine shop turnings	*16.00-17.00*
Mixed borings, turnings	*17.00-18.00*
Short shovel turnings	*19.00-20.00*
No. 1 cast	33.00-34.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast	41.00-42.00

BUFFALO

No. 1 heavy melting	47.00-48.00
No. 2 heavy melting	40.50-41.50
No. 1 bundles	47.00-48.00
No. 2 bundles	37.50-38.50
No. 1 busheling	47.00-48.00
Mixed borings, turnings	31.00-32.00
Machine shop turnings	29.00-30.00
Short shovel turnings	32.00-33.00
Cast iron borings	33.00-34.00
Low phos.	53.00-54.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	46.00-47.00
No. 1 machinery	51.00-52.00

Railroad Scrap

Rails, random lengths	61.00-62.00
Rails, 3 ft and under	66.00-67.00
Railroad specialties	59.00-60.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*46.00-47.00*
No. 2 heavy melting	*40.00-41.00*
No. 1 bundles	*46.00-47.00*
No. 2 bundles	*32.00-33.00*
No. 1 busheling	*46.00-47.00*
Machine shop turnings	*28.00-29.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*31.00-32.00*
Cast iron borings	*24.00-25.00*
Low phos. 18 in.	*52.00-53.00*

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Heavy breakable cast	39.00-40.00
Chargilg box cast	39.00-40.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt.	50.00-51.00
Rails, 18 in. and under	*69.00-70.00*
Rails, random lengths	*60.00-61.00*

BIRMINGHAM

No. 1 heavy melting	46.00-47.00
No. 2 heavy melting	36.00-37.00
No. 1 bundles	46.00-47.00
No. 2 bundles	29.00-30.00
No. 1 busheling	46.00-47.00
Cast iron borings	27.00-28.00
Short shovel turnings	33.00-34.00
Machine shop turnings	31.00-32.00
Bar crops and plates	*50.00-51.00*
Structurals & plate	*49.00-50.00*
Electric furnace bundles	47.00-48.00
Electric furnace:	
3 ft and under	45.00-46.00
2 ft and under	46.00-47.00

Cast Iron Grades

No. 1 cupola	*52.00-53.00*
Stove plate	*52.00-53.00*
Unstripped motor blocks	*41.00-42.00*
Charging box cast	37.00-38.00
No. 1 wheels	*41.00-42.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*49.00-50.00*
Rails, 18 in. and under	*57.00-58.00*
Rails, rerolling	62.00-63.00
Rails, random lengths	*51.00-52.00*
Angles, splice bars	*54.00-55.00*

SEATTLE

No. 1 heavy melting	42.00
No. 2 heavy melting	40.00
No. 1 bundles	40.00
No. 2 bundles	*25.00*
Mach ne shop turnings	27.00
Mixed borings, turnings	27.00
Electric furnace No. 1	*40.00*

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	35.00
Unstripped motor blocks	30.50
Stove plate (f.o.b. plant)	28.00

LOS ANGELES

No. 1 heavy melting	46.00
No. 2 heavy melting	44.00
No. 1 bundles	45.00
No. 2 bundles	35.00
Machine shop turnings	35.00
Shoveling turnings	32.00
Cast iron borings	31.00
Cut structural and plate, 1 ft and under	60.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00

SAN FRANCISCO

No. 1 heavy melting	44.00
No. 2 heavy melting	42.00
No. 1 bundles	43.00
No. 2 bundles	35.00
Machine shop turnings	30.00
Mixed borings, turnings	30.00
Cast iron borings	30.00
Heavy turnings	30.00
Short shovel turnings	30.00
Cut structurals, 3 ft.	50.00

Cast Iron Grades

No. 1 cupola	52.00
Charging box cast	45.00
Stove plate	46.00
Heavy breakable cast	40.00
Unstripped motor blocks	40.00
Clean auto cast	52.00
No. 1 wheels	45.00
Drop broken machinery	52.00

HAMILTON, ONT.

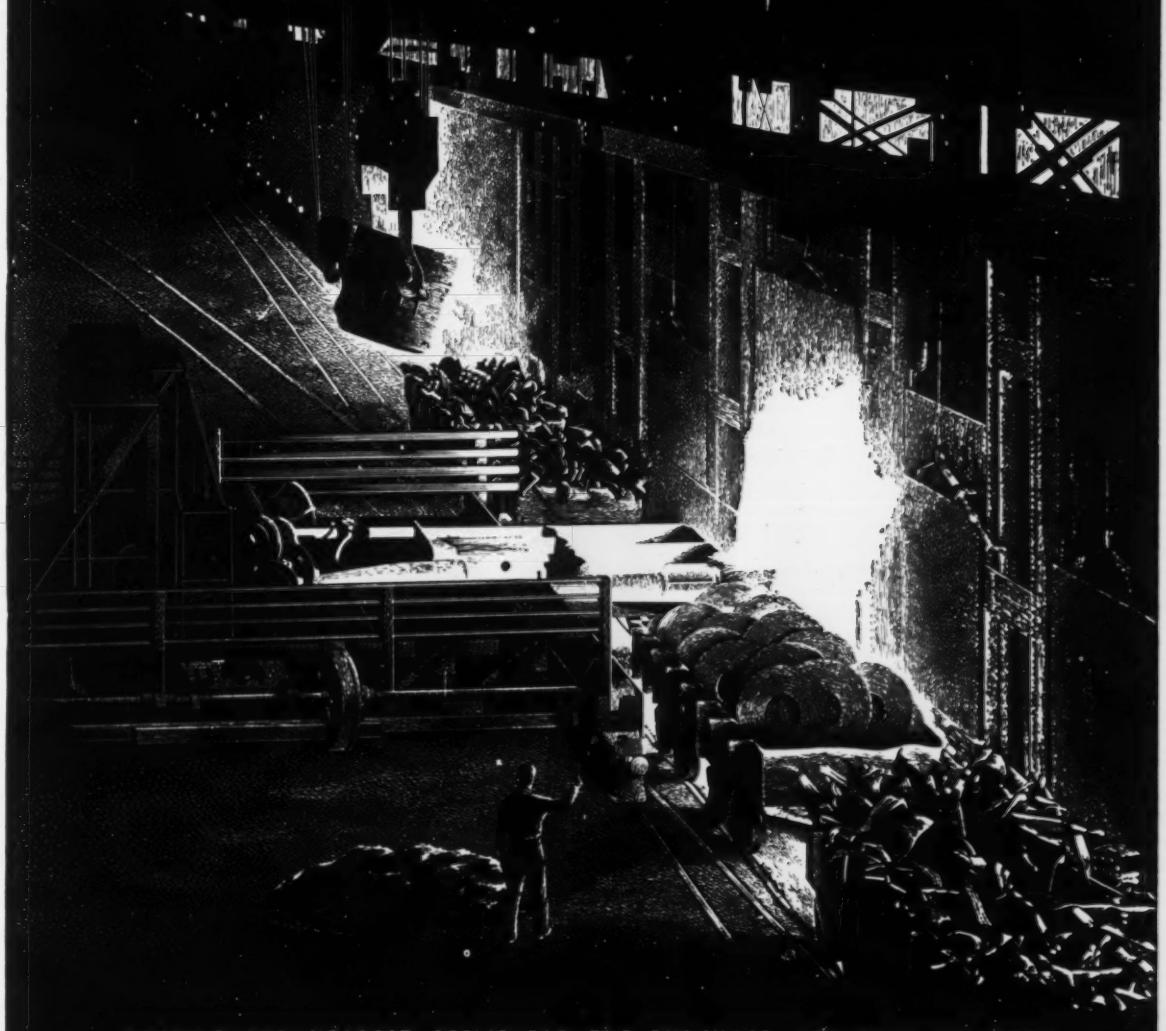
No. 1 heavy melting	*47.00*
No. 2 heavy melting	*42.00*
No. 1 bundles	*47.00*
No. 2 bundles	*36.00*
Mixed steel scrap	*42.00*
Mixed borings, turnings	24.00
Busheling, new factory:	
Prepared	*47.00*
Unprepared	*41.00*
Short steel turnings	30.00
Rails, rerolling	61.00

Cast Iron Grades†

No. 1 machinery cast	50.00

†F.o.b. Hamilton, Ont.

for the purchase or sale of **scrap**



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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

4th Quarter Loses Glow

Don't look for any sudden business shift during the period. It may turn out to be the year's best for most metals, but any gains will be moderate

Nonferrous Metal Prices, Pages 128 & 129

UNCERTAINTY clouds the nonferrous outlook for the fourth quarter.

Some metalsmen think it may be the year's best, but the industry is not nearly as hopeful as it was one or two months ago. Some of the basic signs of an upturn (such as inventory buildups) are still missing. They should have appeared before now if there's to be a substantial improvement, observers figure.

Here's a rundown on several major metals:

Lead, Zinc—Most producers expect both metals to make a little better showing than they have, but no one forecasts a major upswing. Lead traditionally is strongest in the fourth quarter when battery manufacturers come into the market for large tonnages. Some observers see a 5 to 10 per cent sales pickup over the third quarter performance.

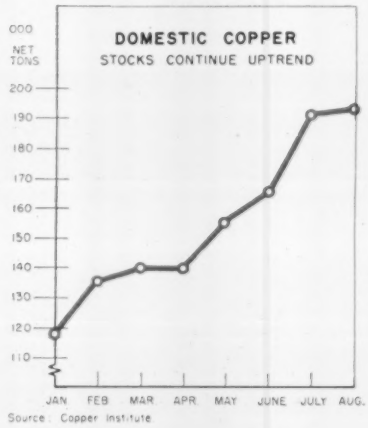
Zinc sales to diecasters and galvanizers have gained recently, and it's felt this business will improve even more in the fourth quarter. Two weaknesses: 1. Brass mill sales are still down. 2. Business from Detroit hasn't been as good as expected.

Lead and zinc prices should hold fairly steady until the Tariff Commission reaches a decision on import duties, probably some time after the first of the year. A decision favorable to domestic producers might boost prices. An unfavorable one could depress them.

Copper—The outlook is uncertain. The consensus seems to be that business will improve late in the quarter, making it the best or second best period of the year.

Producers look for more business from brass and wire mills as well as construction and automotive companies. A factor: Stocks are so low many customers may do some buying for inventory in addition to filling current requirements.

Copper's big problem is still overproduction, with the resultant



Source: Copper Institute

buildup in stocks (see chart). But the situation has eased some lately. It's estimated that U. S. cutbacks come to around 8800 tons monthly, those outside the U. S. about 3000 tons monthly. Observers believe that if producers can reduce output to where it's in line with potential consumption, demand will improve substantially.

Aluminum—Producers hope for a fourth quarter upsurge but admit there are few indications of one so far. But they say consumers' inventories are so low the picture could change overnight. Many firms built up inventories in July to beat the Aug. 1 price rise. They should be coming into the market soon for additional metal, says one producer.

There has been some pickup in demand from diecasters. Aluminum foil is also showing a little strength. Minus factors: 1. Although sales to Detroit have improved, orders so far are below expectations. 2. Shipments to the construction and appliance industries are still down.

Not helping aluminum's situation is the fact that production is running ahead of the 1956 pace while demand is off. Primary production through August was 1,110,733 tons, versus 1,104,326 tons in the same period last year.

Nickel—The fourth quarter may be a little better, but no sharp upturn is seen. Slight sales gains to the stainless steel and automotive industries are reported, but other categories are down some. Producers say they are selling most of the nickel they produce, but that it takes more effort than formerly to dispose of it.

Tin — Buying has been poor. Optimism is dwindling in the industry because the expected upswing is not materializing. Some tin platers (the industry's biggest customers) claim they have enough stocks to last until yearend.

Tin is also plagued by overproduction. There may be a surplus of 7000 to 12,000 tons this year. Reason: The government stopped buying for stockpile late last year, throwing additional metal onto the market in 1957.

NONFERROUS PRICE RECORD

	Price Sept. 25	Last Change	Previous Price	Aug. Avg	July Avg	Sept., 1956 Avg
Aluminum ..	28.10	Aug. 1, 1957	27.10	28.100	27.100	27.100
Copper	26.00–27.00	Sept. 12, 1957	25.50–27.00	28.639	28.822	39.500
Lead	13.80	June 11, 1957	14.80	13.800	13.800	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	64.500
Tin	93.50	Sept. 20, 1957	93.625	94.259	96.576	103.745
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.

Modern electronically controlled slitters give you exact, clean-edged widths. Speeds up to 700 linear feet per minute are another factor in prompt service.

Anaconda Aluminum Coiled Sheet

ALUMINUM COILED SHEET produced to the high standards of quality and uniformity maintained by The American Brass Company is now available for prompt shipment from our Torrington Division to all points in the United States.

It is rolled on the most modern, high-speed equipment, X-ray controlled to close tolerance in gage. High-speed, electronically operated slitters give exact widths with clean edges on evenly and tightly wound coils. Latest annealing furnaces—with controlled atmosphere and temperature—provide high uniformity of metal structure to meet specified mechanical-property limits.

IN THESE WIDTHS: Maximum 28 inches
Minimum 3/8 inch

IN THESE THICKNESSES: Maximum 0.064 inch
Minimum .006 inch

COIL WEIGHTS: Up to 100 lb. per inch of width

ARBOR SIZES: 4, 6, 8, 10, 12, 16, and 20 inches in diameter

ALLOYS: 1100, 3003, 3004, 5005, 5050, 5052

TEMPERS: Alloy Nos. 1100, 3003, 5005
–O, –H12, –H14, –H16, –H18
Alloy Nos. 3004, 5005, 5050, 5052
–O, –H32, –H34, –H36, –H38

FOR IMMEDIATE ACTION, call The American Brass Company Office nearest you. The American Brass Company, Waterbury 20, Conn.

5296

ANACONDA®
ALUMINUM COILED SHEET
Made by The American Brass Company

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100-lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $120 per lb, nom.

Copper: Electrolytic, 27.00 deld.; custom smelters, 26.00; lake, 27.00 deld; fire refined, 26.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $86-110 nom. per troy oz.

Lead: Common, 13.80; chemical, 13.90; corroding, 13.90, St. Louis, New York basis, add 0.20.

Lithium: 98+%, cups or ingots, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $245-248 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $80-100 per troy oz, nom.

Palladium: $21-24 per troy oz.

Platinum: $81-87 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $10.50 per lb, commercial grade.

Silver: Open market, 90.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.50.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), $2.25; grade A-2 (0.5% Fe max.), $2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.50 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, $4.10-4.20.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.75-30.25; No. 12 foundry alloy (No. 2 grade), 21.75-23.00; 5% silicon alloy, 0.60 Cu max., 25.50-26.00; 13 alloy, 0.60 Cu max., 25.50-26.00; 195 alloy, 24.75-26.75; 108 alloy, 22.25-23.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.00; grade 3, 20.75; grade 4, 19.00.

Brass Ingot: Red brass, No. 115, 27.75; tin bronze, No. 225, 37.00; No. 245, 31.25; high-leaded tin bronze, No. 305, 31.75; No. 1 yellow, No. 405, 22.50; manganese bronze, No. 421, 25.50.

Magnesium Alloy Ingot: AZ63A, 40.75; AZ91B, 37.25; AZ91C, 40.75; AZ92A, 40.75.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.82, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.80, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 32.355; l.c.l., 32.98. Weatherproof, 30,000-lb lots, 33.66; l.c.l., 34.78. Magnet wire deld., 40.43, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $19.50 per cwt; pipe, full coils, $19.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $9.50-15.95; sheared mill plate, $8.00-11.50; wire, $7.50-11.50; forging billets, $6.00-7.60; hot-rolled and forged bars, $6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.00-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.249-0.136	43.10-47.60	....
0.135-0.096	43.60-48.70	40.50-41.10
0.095-0.077	44.30-50.50	40.60-41.30
0.076-0.061	44.90-52.80	40.80-42.00
0.060-0.048	45.60-55.10	41.40-43.10
0.047-0.038	46.20-57.90	41.90-44.50
0.037-0.030	46.60-62.90	42.30-46.30
0.029-0.024	47.20-54.70	42.60-47.00
0.023-0.019	48.20-58.10	43.70-45.40
0.018-0.017	49.00-55.40	44.30-46.00
0.016-0.015	49.90-56.30	45.10-46.80
0.014	50.90	46.10-47.80
0.013-0.012	52.10	46.80
0.011	53.10	48.00
0.010-0.0095	54.60	49.40
0.009-0.0085	55.90	50.90
0.008-0.0075	57.50	52.10
0.007	59.00	53.60
0.006	60.60	55.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50
5050-F	43.80	48.60
3004-F	44.80	50.50
5052-F	45.40	51.20
6061-T6	46.90	53.00
2024-T4*	50.60	57.40
7075-T6*	58.40	66.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30 000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	78.20	75.20	....	....
0.156-0.172	66.20	63.40	....	....
0.188	66.20	63.40	....	81.60
0.219-0.234	63.00	61.50	....	....
0.250-0.281	63.00	61.50	....	77.90
0.313	63.00	61.50	....	74.20
0.344	62.50	....	....	....
Cold-Finished				
0.375-0.517	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	....	59.60
1.125-1.500	58.60	57.40	62.80	59.60
Rolled				
1.563	57.00	55.70	....	....
1.625-2.000	56.30	54.90	....	57.50
2.125-2.500	54.80	53.40	....	....
2.563-3.375	53.20	51.70	....	....

Forging Stock: Round, Class 1, 45.20-58.60 in specific lengths, 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 50.50-66.60 in random lengths, 0.375-4 in. thick, width 0.750-10 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
⅜	$19.40	2	$ 59.90
1	30.50	4	165.05
1¼	41.30	6	296.10
1½	49.40	8	445.55

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.80
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Thread plate, .188 in., 71.70; .250-2.00 in., 70.60. Tooling plates, .250-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Aluminum: 1100 clippings, 13.50-14.00; old sheets, 10.50-11.00; borings and turnings, 6.50-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f	
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.13b	46.36c	....	49.32	23.000	23.000	22.250
Yellow Brass	43.02	31.30d	43.56	45.93	17.375	17.125	15.750
Low Brass, 80%	45.50	45.44	46.04	48.31	19.500	19.250	18.750
Red Brass, 85%	46.37	46.31	46.91	49.18	20.250	20.000	19.500
Com. Bronze, 90%	47.78	47.72	48.32	50.34	21.000	20.750	20.250
Manganese Bronze	51.01	45.11	55.61	....	16.125	15.875	15.375
Muntz Metal	45.39	41.20	....	....	16.375	16.125	15.625
Naval Brass	47.27	41.58	54.33	50.68	16.125	15.875	15.375
Silicon Bronze	53.76	52.95	53.80	55.74e	22.625	22.375	21.625
Nickel Silver, 10%	59.43	61.75	61.75	....	23.625	23.375	11.813
Phos. Bronze, A-5%	68.07	68.57	68.57	69.75	23.750	23.500	22.500

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20.000 lb, f.o.b. shipping point. On lots over 20.000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

7.00; crankcases, 10.50-11.00; industrial castings, 10.50-11.00.

Copper and Brass: No. 1 heavy copper and wire, 18.25-18.75; No. 2 heavy copper and wire, 16.75-17.25; light copper, 14.75-15.25; No. 1 composition red brass 16.50-17.00; No. 1 composition turnings 16.00-16.50; new brass clippings, 14.00-14.50; light brass, 10.00-10.50; heavy yellow brass, 12.00-12.50; new brass rod ends, 13.00-13.50; auto radiators, unsweated, 12.50-13.00; cocks and faucets, 13.00-13.50; brass pipe, 13.50-14.00.

Lead: Heavy 9.50-10.00; battery plates, 4.25-4.50; linotype and stereotype, 11.50-12.00; electrotype, 10.00-10.50; mixed babbitt, 11.00-11.50.

Monel: Clippings, 35.00-40.00; old sheets, 33.00-38.00; turnings, 24.00-30.00; rods, 35.00-40.00.

Nickel: Sheets and clips, 50.00-55.00; rolled anodes, 50.00-55.00; turnings, 45.00-50.00; rod ends, 50.00-55.00.

Zinc: Old zinc 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 16.50-17.50; 3003 clippings, 16.50-17.50; 6151 clippings, 16.00-17.50; 5052 clippings, 16.00-17.00; 2014 clippings, 15.50-17.00; 2017 clippings, 15.50-17.00; 2024 clippings, 15.50-17.00; mixed clippings, 15.00-16.00; old sheets, 13.00-13.50; old cast, 13.00-13.50; clean old cable (free of steel), 16.00-16.50; borings and turnings, 13.50-15.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 53.00; light scrap, 48.00; turnings and borings, 33.00.

Copper and Brass: No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 20.00; light copper, 17.75; refinery brass (60% copper) per dry copper content, 19.25.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 heavy copper and wire, 21.50; No. 2 heavy copper and wire, 20.00; light copper 17.75; No. 1 composition borings, 18.25; No. 1 composition solids, 18.75; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70 per lb.

Copper: Flat-rolled, 45.29; oval, 43.50, 5000-10,000 lb., electrodeposited, 35.75. 2000-5000 lb lots; cast, 36.25, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-999 lb, 112.00; 500-1999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 112.50; 200-499 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

Zinc: Balls, 17.50; flat tops, 17.50; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 2000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30, f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 74.80; 300-900 lb, 72.80.

Copper Sulphate: 100-1900 lb, 14.55; 2000-5900 lb, 12.55; 6000-11,900 lb, 12.30; 12,000-22,900 lb, 12.05; 23,000 lb or more, 11.55.

Nickel Chloride: Less than 400 lb, 35.00; 400-9990 lb, 33.00; 10,000 lb, 32.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.20; 100-699 lb, 66.20; 700-1900 lb, 63.50; 200-9900 lb, 61.60; 10,000 lb or more, 60.30.

Stannous Chloride (anhydrous): Less than 25 lb, 161.70; 25 lb, 129.70; 100 lb, 114.70; 400 lb, 112.20; 5200-19,600 lb, 100.00; 20,000 lb or more, 87.80.

Stannous Sulphate: Less than 50 lb, 127.50; 50 lb, 97.50; 100-1900 lb, 95.50; 2000 lb or more, 93.50.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 123*)

a ton when new orders are placed for October delivery.

While there has been some accumulation of scrap in dealers' yards during this quiet selling period, supplies on hand are not large enough yet to depress the market. But dealers agree that a continued backing up of material could have an adverse effect on prices.

Cincinnati—Looking back, the summer "doldrums" in the scrap market are beginning to look pretty good. Activity in the scrap trade is practically at a standstill. With little buying, prices are soft and nominal. Brokers' buying price on No. 1 heavy sagged another $2 a ton to $46-$47. Other grades are off $1 to $3 a ton.

Birmingham—Little buying of open-hearth scrap is reported in this district. The few orders being placed are for small amounts and quick shipments, usually at prices under those being quoted. Although some buyers of quality cast scrap are still placing orders at high prices, the market is generally weaker and some consumers have withdrawn. Specialty grades also are weaker. Some sporadic buying for export is noted, but here again prices are lower.

Los Angeles—The scrap market is steady, but weakened export demand and reduced mill purchases foreshadow a price decline.

Seattle—No price changes in the scrap market are reported. Volume of sales is restricted as the

CLASSIFIED

Positions Wanted

METALLURGIST. B. S. degree, age 31. 6½ years manufacturing and engineering experience with accessories, farm equipment and aircraft manufacturers, desires to become associated with progressive manufacturer. Education, experiences, and interests lie with material selection and its processing, with emphasis on steel application, heat treatment, and electroplating and other surface protection. Write Box 599, STEEL, Penton Bldg., Cleveland 13, Ohio.

INDUSTRIAL SALESMAN
TO REPRESENT STEEL FASTENER MANUFACTURER IN NORTH CALIFORNIA AREA. EXPERIENCED. AGE 38. SALARY AND EXPENSES. WRITE BOX 601, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.

NINE YEARS EXPERIENCE IN MACHINE DESIGN. Plant work, structural steel, sales engineering (three years traveling), and engineering supervision. Also a degree in Industrial Engineering. Write Box 579, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR SALE

Model 1A Kane & Roach 20 Roll Straightening Machine, complete with rolls, Flying Cut-Off, and 20′ Run Out Table. Capacity 7/16″ to 7/8″ bars. Machine new in 1952. Condition like new.

J. T. Jordan
Towne Robinson Nut Company
4401 Wyoming Avenue
Dearborn 2, Michigan

FOR SALE

STRUCTURAL STEEL FABRICATING BUSINESS. 3000 ton annual capacity, in rapidly expanding California area. Only $100,000 including land, buildings, machinery. Might lease to responsible parties. Seller can supply approximately 1,000 ton annual business. Box No. 598, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT SUPERINTENDENT

A leading manufacturer of pressure vessels and related products requires an energetic and progressive individual responsible for all plant manufacturing operations. The successful candidate must have:

- Unusually broad experience in layout, forming, setup, and welding
- • Experience in the fabrication and machining of pressure vessels to code specifications
- • • Heavy management experience in developing supervisors to achieve results

This position located in Northeastern Pennsylvania offers an unusual opportunity for personal recognition.

Write to Box No. 597, STEEL Penton Bldg. Cleveland 13, Ohio

FOREMAN

Progressive New Jersey organization has opening in supervision for experienced Drop Forge Foreman. Must be familiar with all phases of steam and board hammer operation. Top salary to qualified individual. All employee benefits. Write giving full details in first letter.

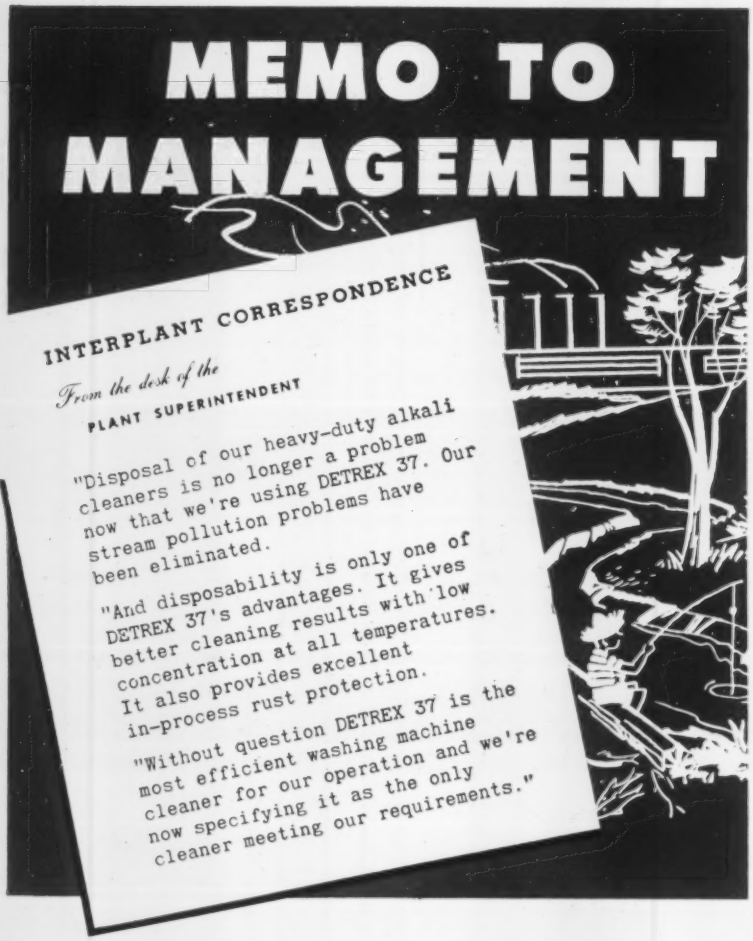
McWILLIAMS FORGE CO., INC.
FRANKLIN ROAD
ROCKAWAY, N. J.

CLASSIFIED

Help Wanted

FOUNDRY SUPERINTENDENT for jobbing foundry in New England producing carbon, low alloy and stainless castings. Must have practical and technical background, be cost minded and be able to assume responsibility. In reply include complete resume giving experience, background, availability, age, salary expected, etc. Reply to Box 594, STEEL, Penton Bldg., Cleveland 13, Ohio.

METALLURGISTS: Steel company located in northeastern Ohio has several openings for metallurgical graduates interested in titanium research and production control. Send resume to Box 600, STEEL, Penton Bldg., Cleveland 13, Ohio.


MEMO TO MANAGEMENT
INTERPLANT CORRESPONDENCE
From the desk of the
PLANT SUPERINTENDENT
"Disposal of our heavy-duty alkali cleaners is no longer a problem now that we're using DETREX 37. Our stream pollution problems have been eliminated.
"And disposability is only one of DETREX 37's advantages. It gives better cleaning results with low concentration at all temperatures. It also provides excellent in-process rust protection.
"Without question DETREX 37 is the most efficient washing machine cleaner for our operation and we're now specifying it as the only cleaner meeting our requirements."

ALL-PURPOSE DETREX ALKALI CLEANERS MAKE CLEANING OPERATIONS ECONOMICAL AND EFFICIENT

In addition to DETREX 37, DETREX manufactures a metal cleaning compound to meet every requirement in this field. Without obligation, a DETREX representative will analyze your specific cleaning application. Drawing from his experience and the wide range of DETREX water-soluble metal cleaning compounds, he can then recommend the one that will guarantee maximum efficiency in your metal cleaning operation.

DETREX service continues beyond the initial sale with regular checks on product performance and efficiency. Only DETREX provides such complete coverage—from recommendation of the proper method through installation to periodic counsel and service.

This "One-Source" efficiency has made DETREX, pioneer in the metal cleaning and processing field, the recognized leader. Let us show you how DETREX can recommend and service the most efficient methods, materials and machines to meet your requirements. Write today for information on increasing efficiency at lower cost.

DETREX CHEMICAL INDUSTRIES, INC.
BOX 501-A, DETROIT 32, MICHIGAN

larger buyers have comfortable inventories and the export situation continues dormant. Exporters hope the transpacific movement will revive next month. Practically all commitments for delivery to Japan have been consummated and no new full cargo charters are reported. Ocean rates continue depressed. Less than a year ago, full cargo scrap ships, Atlantic-Gulf to Japan, were getting $345,000; today, $120,000 is the asking figure. Transpacific rates have dropped from $230,000 to $65,000 with no takers. The sole recent scrap charter reported was done at $79,000, California loading, European discharge. This was believed to be a distress ship whose owners accepted the offer to get the vessel out of the Pacific.

Sulfur Prices Decline

Texas Gulf Sulphur Co., New York, reduced prices $3 a gross ton on bright (top grade) sulfur and $2.50 a gross ton on dark sulfur, effective as of Sept. 18. New prices: $23.50 a gross ton for bright sulfur, f.o.b. cars, mine; and $23 for dark sulfur. General competitive conditions were given as the reason for the change.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1025 tons, state highway bridges, Southeast Expressway, Contract No. 6, Braintree-Weymouth, Mass., to West End Iron Works, Cambridge, Mass., through J. G. White Contracting Co., Westwood, Mass., general contractor.

820 tons, two 3-span and two 2-span I-beam highway bridges, Guilford-Brattleboro, Vt., to Vermont Structural Steel Co., Burlington, Vt.; Lane Construction Co., Meriden, Conn., general contractor.

225 tons, North Junior High School, Brockton, Mass., to Boston Steel Fabricators Inc., Boston, through L. & R. Constructing Co., North Reading, Mass., general contractor.

200 tons (including bars), building, Naval Air Station at Brunswick, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine, through Herbert E. Callahan, Inc., Auburn, Maine, general contractor.

STRUCTURAL STEEL PENDING

640 tons, also 50 tons reinforcing bars, 598-ft deck truss span, Skamania County, Washington; bids to Bureau of Public Roads, Portland, Oreg., Oct. 4.

REINFORCING BARS . . .

REINFORCING BARS PLACED

225 tons, Washington state Skagit River bridge, to Soule Steel Co., Seattle; Louis Elterich Co., Port Angeles, general contractor.

215 tons, Washington state road jobs, Kittitas and Douglas counties, to Bethlehem Pacific Coast Steel Corp., Seattle; Russell-Gillette Co., Cle Elum, Wash., general contractor.

200 tons, Washington state Pierce County road project to J. D. English Steel Co., Tacoma, Wash; Woodworth & Co., Tacoma, general contractor.

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Red Circle Rolls for all Purposes

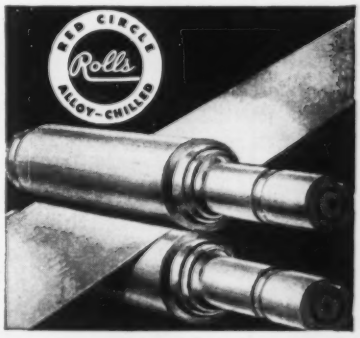
The Red Circle on the Roll is the Hyde Park mark of Quality. Hyde Park makes rolls for every type mill.

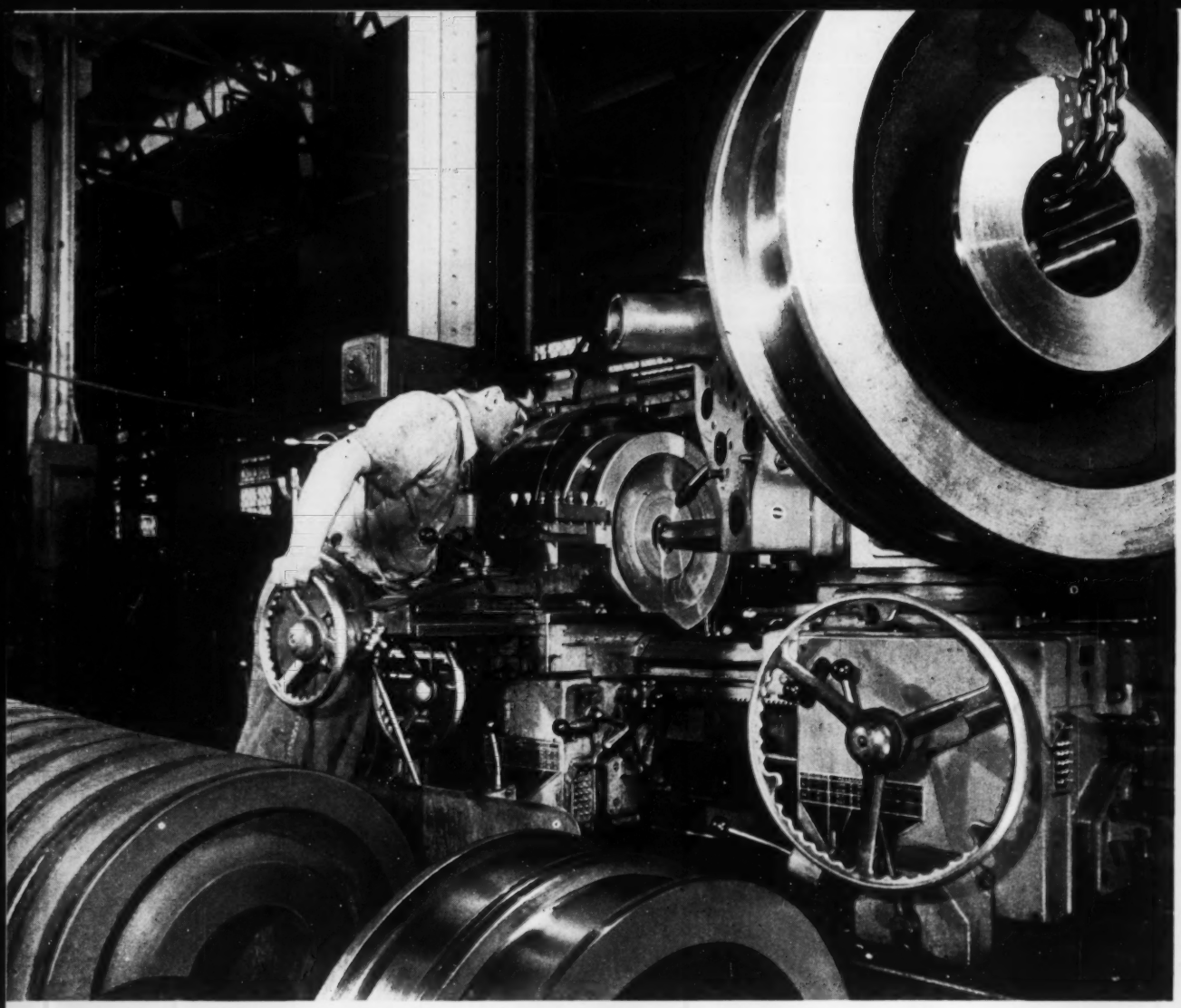
Chilled Rolls
Alloy Iron Rolls
Moly Rolls
Nickel Chilled Rolls
Grain Rolls
Cold Rolls
Sand Rolls

for
Finer Finish, Longer Life
and Greater Tonnage
specify Red Circle

Hyde Park

FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland County, Pa.
ROLLS • ROLLING MILL MACHINERY
GRAY IRON CASTINGS





Thirty-Ton Cranes Will Roll on These Sturdy Wheels

This is a part of the machine shop of Industrial Crane & Hoist, Ingersoll Products Division, Borg-Warner Corporation, Chicago. Those big double-flange wheels, weighing 408 lb each and made from Bethlehem's tough, rugged circular forged blanks, will be used on bridge cranes that the company manufactures. The cranes have a capacity of thirty tons.

Obviously, strength is the first requirement that the wheels have to meet. Another is durability (flanges and tread must be long-wearing). Still a third is overall quality to match that of other components in the big cranes.

The wheels score a bull's-eye on every count, for the husky Bethlehem blanks from which they are made are both forged and rolled in a single operation—a unique process that insures high strength and a well-forged structure throughout.

Bethlehem blanks have many applications in addition to crane wheels. They are widely used for spur, bevel, and herringbone gears; flywheels, sheave wheels, and industrial wheels; turbine rotors, pipe flanges, and many other circular products. Available in a wide choice of sections, the blanks range in size from 10 to 46 in. OD. They can be furnished heat-treated or untreated.

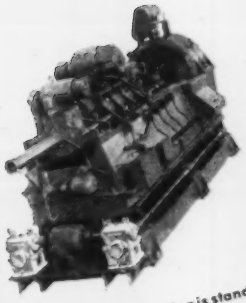
Our nearest office will gladly give you full details. Or ask for a copy of Booklet 216, which contains many pertinent facts and photographs.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributors: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



Cleveland worm gearing is standard on these fully-automatic machines which thread oil field pipe to rigid A.P.I. specifications, ranging from 1¼" to 13⅜" O.D. In addition to worm gearing inside the machine, note two Cleveland Worm Gear Speed Reducers in foreground.

On job 18 years, CLEVELAND drive is good as new

AFTER 18 years of continuous service in a well-known pipe mill in Pennsylvania, a Stamets pipe threading machine had its first major overhaul. When the Cleveland worm gearing was removed from the machine it looked almost like new, showed only slight traces of wear. This unretouched photograph reveals the splendid condition of both the worm and gear. In fact, the gearing is in such fine shape that it was put right back in the machine—probably good for another 18 years of strenuous pipe threading.

This example is one of thousands of Cleveland worm gear drives, many made 25 and even 30 years ago that are still in service today. They serve in every phase of American industry, drive every type of mechanical equipment where a powerful, trouble-free, right-angle drive is wanted.

For full presentation of the many types and sizes of Cleveland worm-gear drives available, write for Catalog 400. The Cleveland Worm & Gear Co., 3270 E. 80th St., Cleveland 4, Ohio.

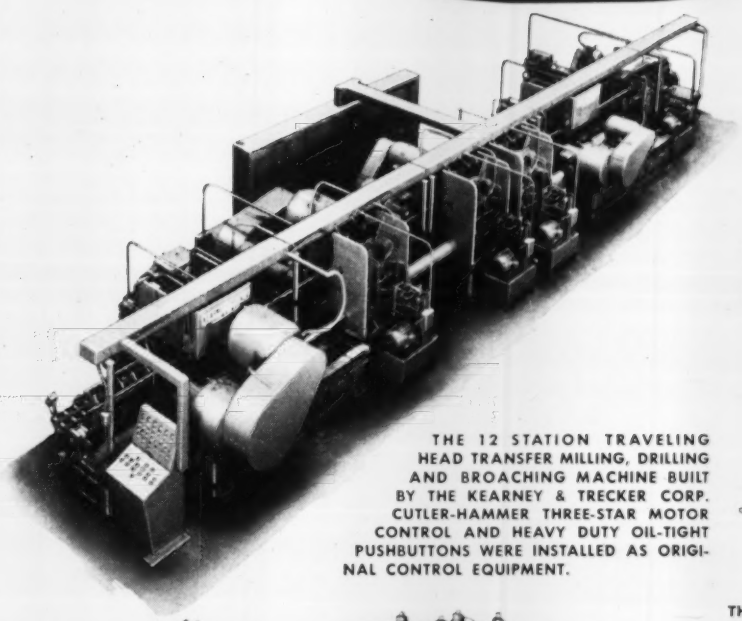
Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

CLEVELAND
Worm Gear
Speed Reducers

Choice of the Leaders

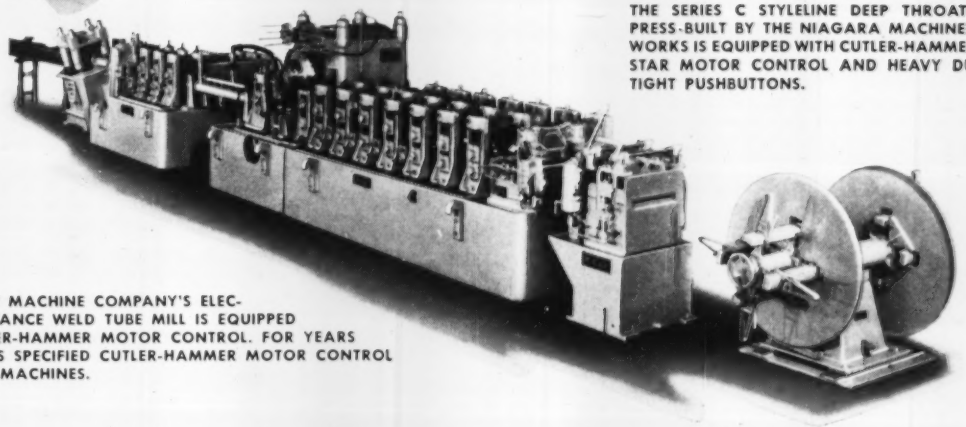
CUTLER-HAMMER
MOTOR CONTROL
C-H

The Mark of Better Machines



THE 12 STATION TRAVELING HEAD TRANSFER MILLING, DRILLING AND BROACHING MACHINE BUILT BY THE KEARNEY & TRECKER CORP. CUTLER-HAMMER THREE-STAR MOTOR CONTROL AND HEAVY DUTY OIL-TIGHT PUSHBUTTONS WERE INSTALLED AS ORIGINAL CONTROL EQUIPMENT.

THE SERIES C STYLELINE DEEP THROAT POWER PRESS-BUILT BY THE NIAGARA MACHINE & TOOL WORKS IS EQUIPPED WITH CUTLER-HAMMER THREE-STAR MOTOR CONTROL AND HEAVY DUTY OIL-TIGHT PUSHBUTTONS.



THE McKAY MACHINE COMPANY'S ELECTRIC RESISTANCE WELD TUBE MILL IS EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL. FOR YEARS McKAY HAS SPECIFIED CUTLER-HAMMER MOTOR CONTROL FOR THEIR MACHINES.

Let the Stars be Your Guide

Whether or not a new machine can do a needed job is not difficult to determine. But the big question to be answered *before* purchase is always, "Will it do the job day after day for years without trouble and delays?"

Experienced buyers are not concerned by this question which time must answer. They know there are reliable guides to dependable machine performance and they base their judgment on these when making selections. One such guide which is widely used is Cutler-Hammer Three-Star Motor Control.

Cutler-Hammer Three-Star Motor Control does more than assure the buyer the electrical equipment is completely dependable. It shows the standard to which the machine was designed and built. It has long been the choice of the leaders and the mark of better machines. CUTLER-HAMMER, Inc., 1211 St. Paul Avenue, Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto.